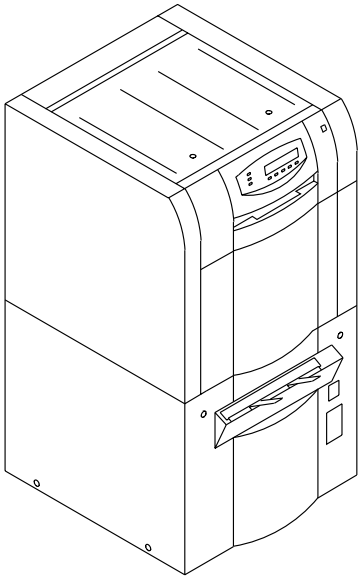
Publication No. 4E8890
20DEC01

SERVICE MANUAL
for the
Kodak MINILOADER 2000P DARKROOM FILM FEEDER
Service Code: 4341
on the
Kodak MINILOADER 2000P
Service Code: 3479
with the
Kodak Min-R MAMMOGRAPHY PROCESSOR
Service Code: 3752

Important
Qualified service personnel must do these procedures.



H191_0014GC

HEALTH IMAGING

Confidential
Restricted Information
© Eastman Kodak Company, 2001

PLEASE NOTE The information contained herein is based on the experience and knowledge relating to the subject matter gained by Eastman Kodak Company prior to publication.

No patent license is granted by this information.

Eastman Kodak Company reserves the right to change this information without notice, and makes no warranty, express or implied, with respect to this information. Kodak shall not be liable for any loss or damage, including consequential or special damages, resulting from any use of this information, even if loss or damage is caused by Kodak's negligence or other fault.

This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

Table of Contents

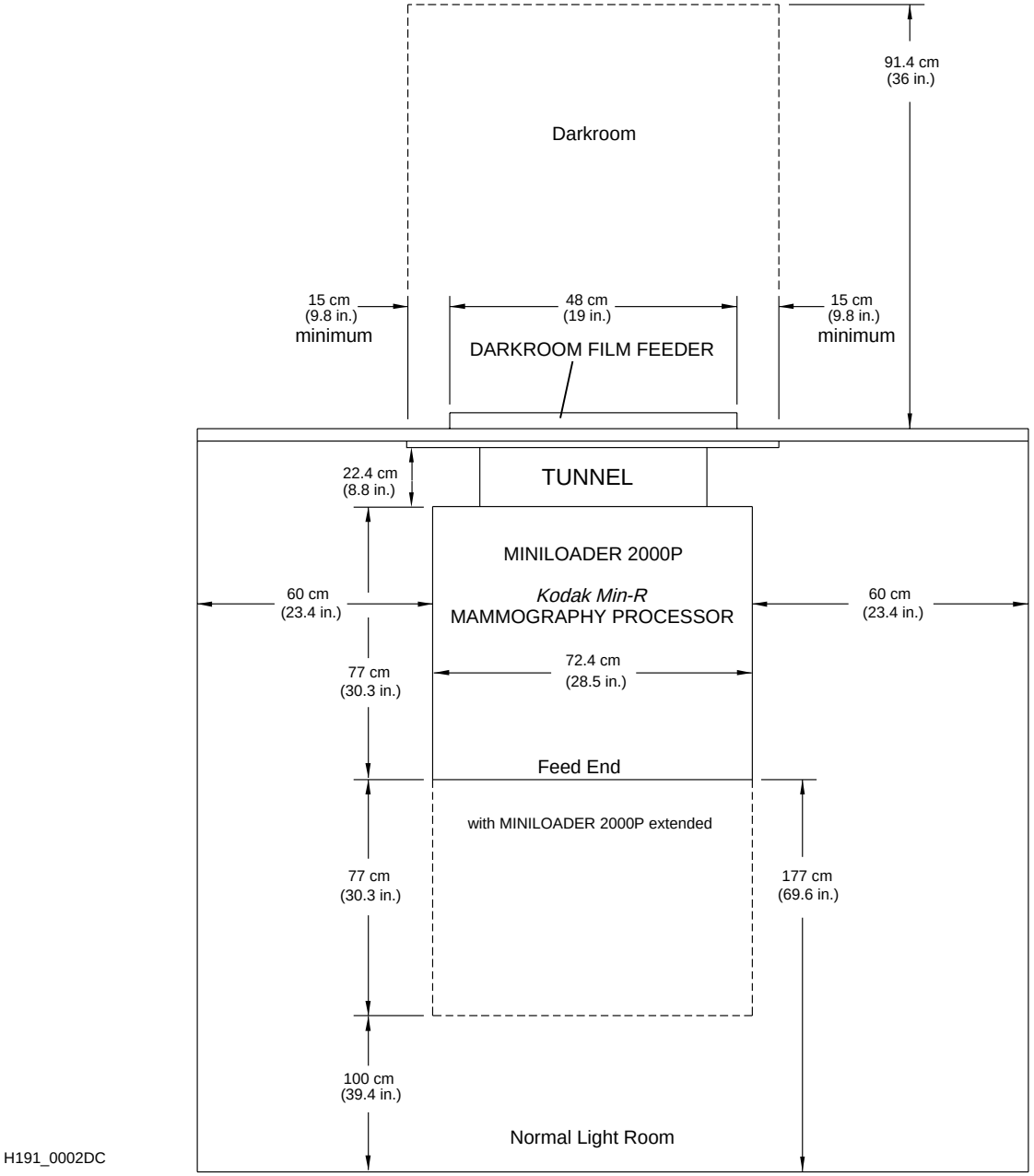
Description	Page
Site Specifications	3
Clearances	3
CUTOUT in the Wall	4
Installation Instructions	5
Necessary Tools and Parts	5
Installing the PANEL	5
Installing the New WIRING HARNESS AY	15
Installing the New FRONT PANEL	20
Installing the Wall	21
Completing the Installation	28
Checking for Correct Operation	29
Additional Service Procedures	30
Safety Tests	30
Diagrams	31
WIRING HARNESS AY	31
Illustrated Parts List	32
DARKROOM FILM FEEDER AY	32
DOOR AY	33
AUDIBLE ALARM, CABLE AY, and SOLENOID AY	34
Software	35
Numerical Index	36
Alphabetical Index	37
Adjustments and Replacements	38
SENSOR B35 and DOOR SOLENOID	38

Section 1: Site Specifications

Clearances

Important

- Provide clearance around the *Kodak* MINILOADER 2000P for service personnel. Clearance that is not within specification can prevent effective operation of the MINILOADER 2000P.
- A smooth and flat floor is necessary to move the MINILOADER 2000P forward.
- A minimum clearance of 15.0 cm (9.80 in.) between the side of the DARKROOM FILM FEEDER (DFF) and the wall is a requirement.
- All services for electrical connections, water, DRAINS, and EXHAUST must be routed through the darkroom.
- 18 WOOD SCREWS are provided for normal installation of the PANELS for the DARKROOM FILM FEEDER to the wall. It might be necessary to purchase another type of SCREW depending on the type of wall material used.



H191_0002DC

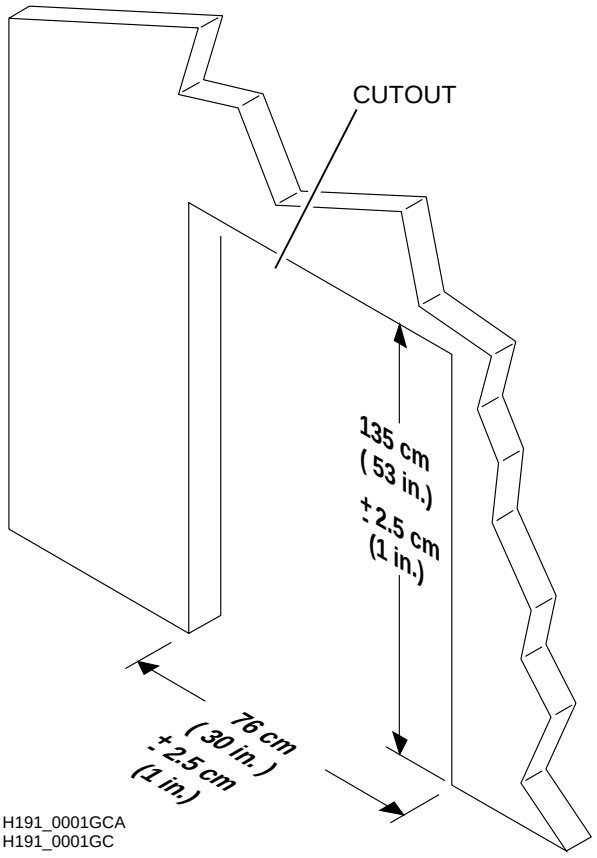
Minimum Clearances:

Left Side:	15.0 cm (9.8 in.)
Right Side:	15.0 cm (9.8 in.)
Feed End:	91.4 cm (36. in.)

Dimensions:

Width:	48.0 cm (19.0 in.)
Height:	110.0 cm (44.5 in.)
Depth:	17.0 cm (6.5 in.)
Weight:	50 kg (110 lb)

CUTOUT in the Wall



H191_0001GCA
H191_0001GC

Section 2: Installation Instructions

Necessary Tools and Parts

Important

- To install the DARKROOM FILM FEEDER, operating software version 2.36 or higher must be loaded on the MINILOADER 2000P. Upgraded service and operational software is packed with the DARKROOM FILM FEEDER.
- 18 SCREWS for wood are provided for normal installation of the PANELS to the wall. It might be necessary to purchase another type of SCREW for the type of wall material used. The DRILL BITS must be purchased locally.

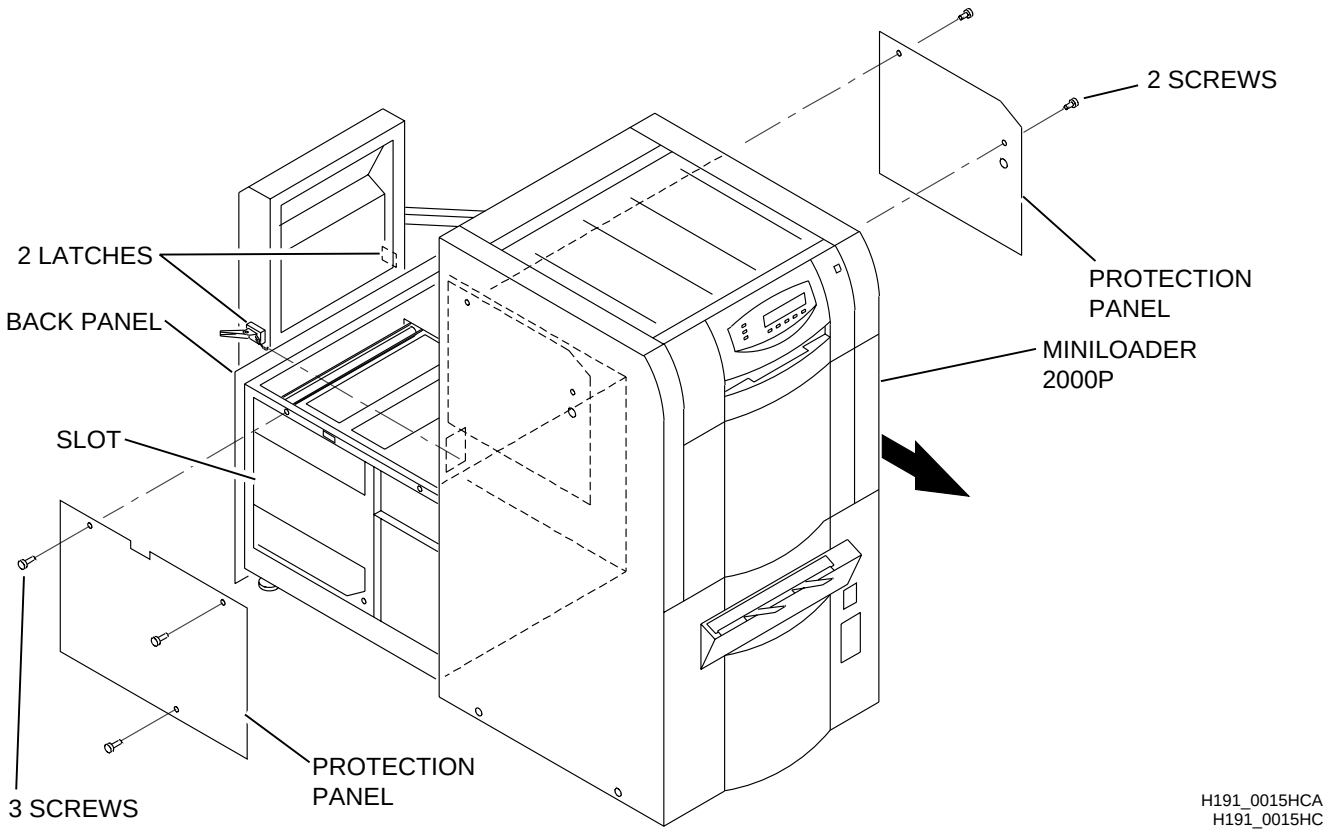
Tool	Description
TL-1466	ELECTRIC DRILL

Installing the PANEL

Warning

Dangerous Voltage

[1] Disconnect the main power and water supply to the MAMMOGRAPHY PROCESSOR and the MINILOADER 2000P.



[2] Open the MINILOADER 2000P:

(a) Release the 2 LATCHES.

(b) Move the MINILOADER 2000P forward.

[3] Remove:

- 2 SCREWS
- PROTECTION PANEL
- 3 SCREWS
- PROTECTION PANEL

[4] Drain the 3 MAMMOGRAPHY PROCESSOR TANKS.

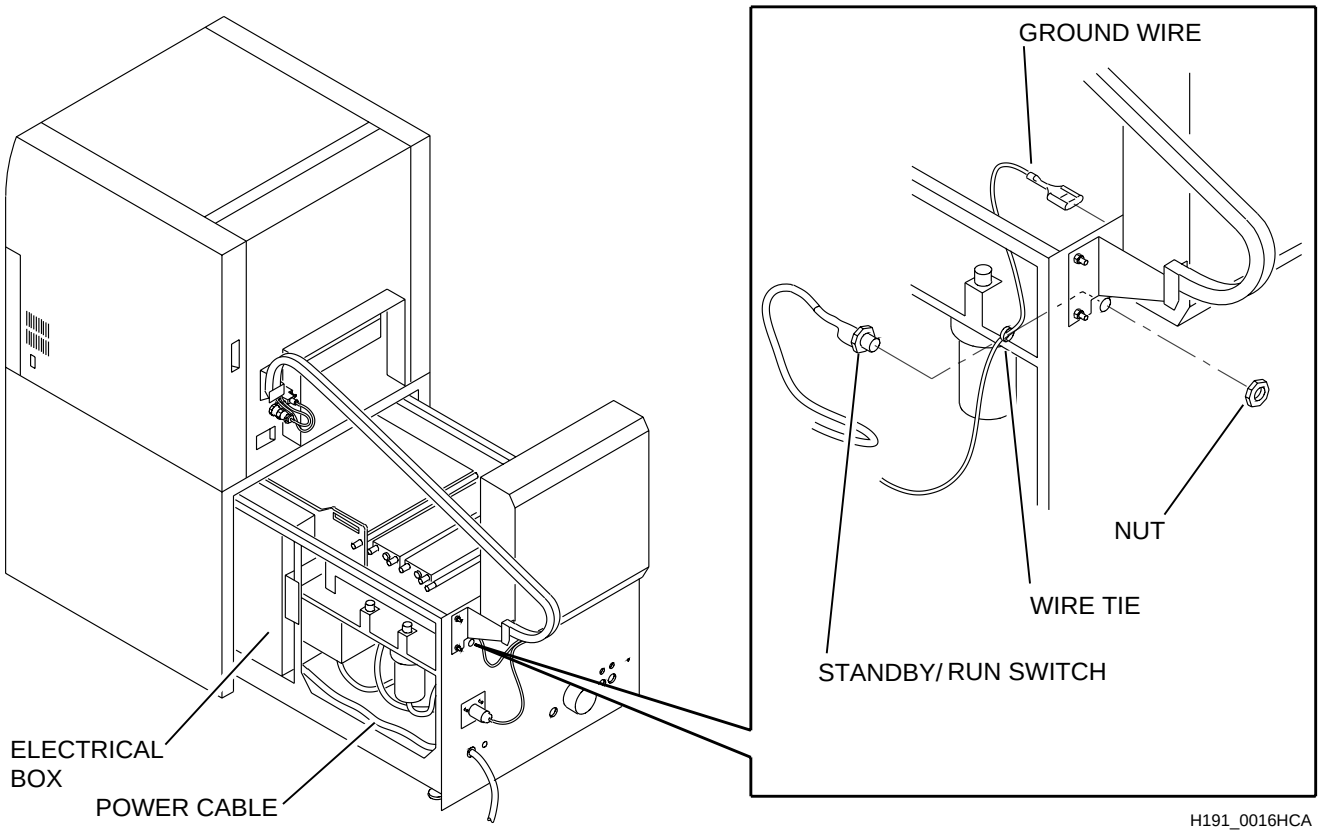
[5] Disconnect the following services.

- DRAINS
  - WASH
  - FIXER
  - DEVELOPER
- REPLENISHMENT LINES
  - FIXER
  - DEVELOPER
- WATER INLET
- EXHAUST

Note

See the INSTALLATION INSTRUCTIONS for the *Kodak Min-R* MAMMOGRAPHY PROCESSOR, Publication No. 3E0817.

[6] Disconnect the POWER CABLE for the MINILOADER 2000P.



H191_0016HCA
H191_0016HC

Important

Make a note of the connections for the wires.

[7] Disconnect and remove the POWER CABLE for the MAMMOGRAPHY PROCESSOR from the ELECTRICAL BOX.

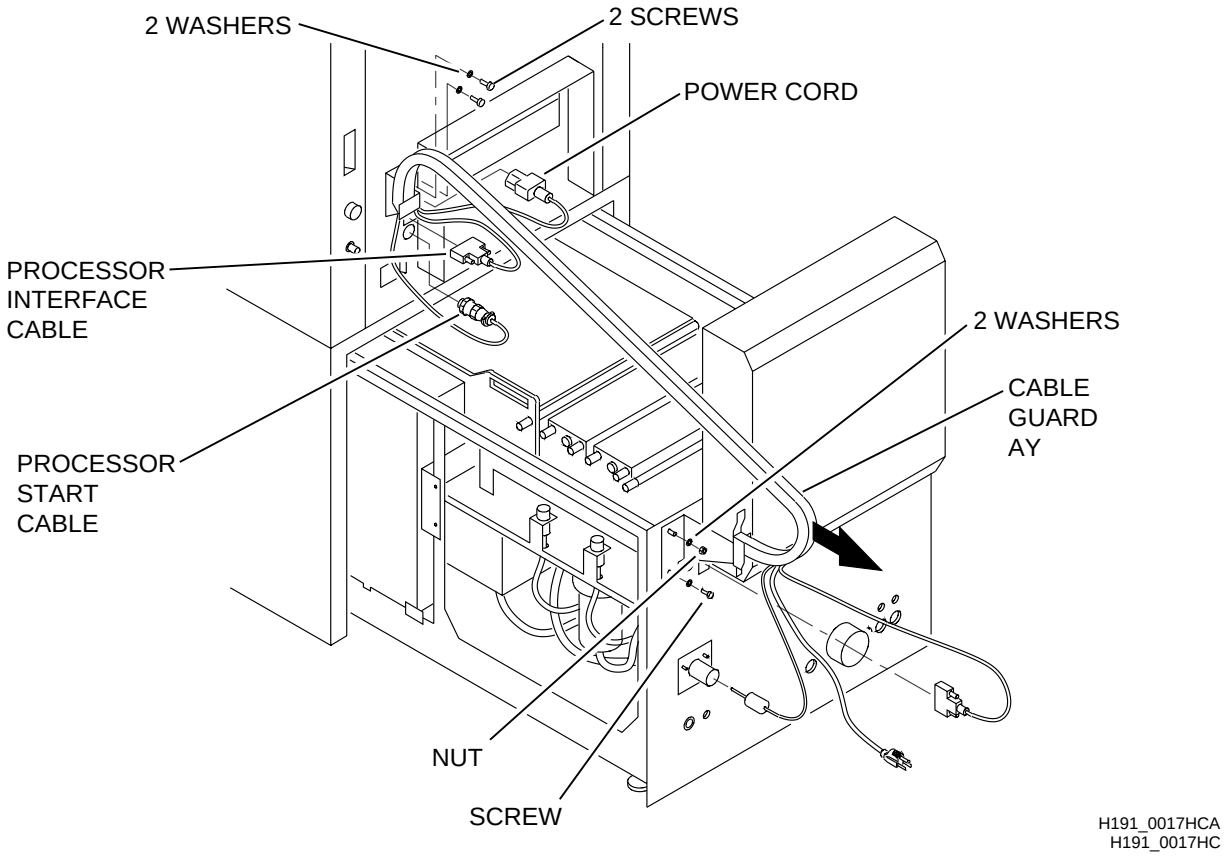
Important

Do not disconnect the wires that are connected to the STANDBY/RUN SWITCH.

[8] Remove:

- NUT
- STANDBY/RUN SWITCH
- WIRE TIE

[9] Disconnect the GROUND WIRE.

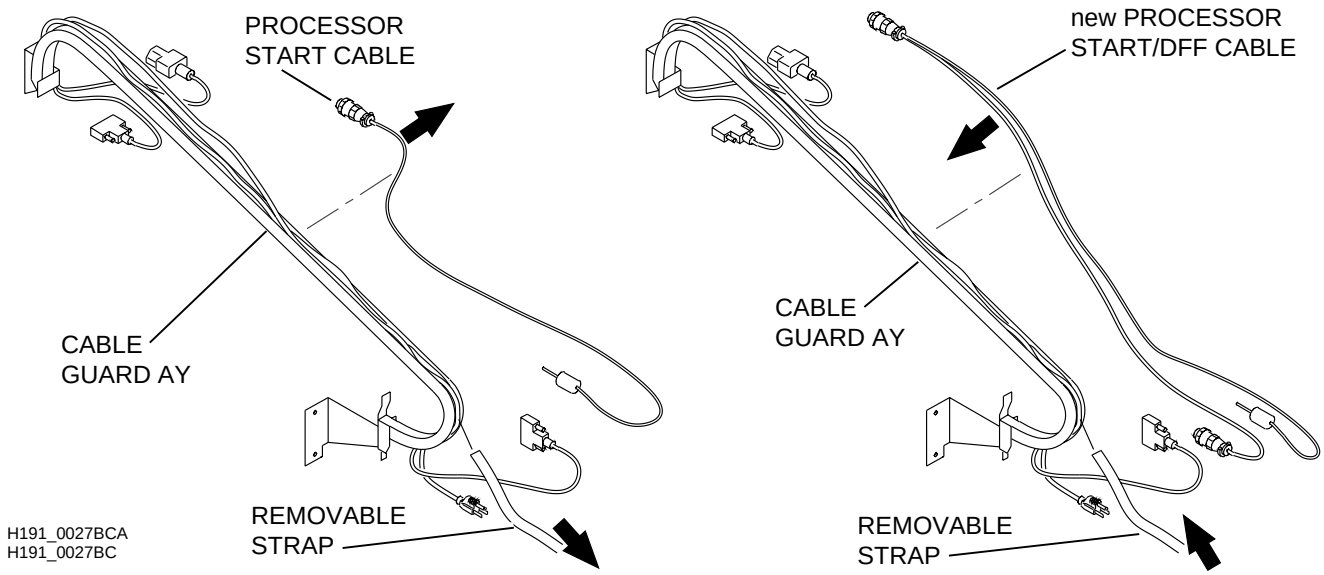


[10] Disconnect:

- POWER CORD
- PROCESSOR START CABLE
- PROCESSOR INTERFACE CABLE

[11] Remove:

- NUT
- SCREW
- 2 WASHERS
- 2 SCREWS
- 2 WASHERS
- CABLE GUARD AY



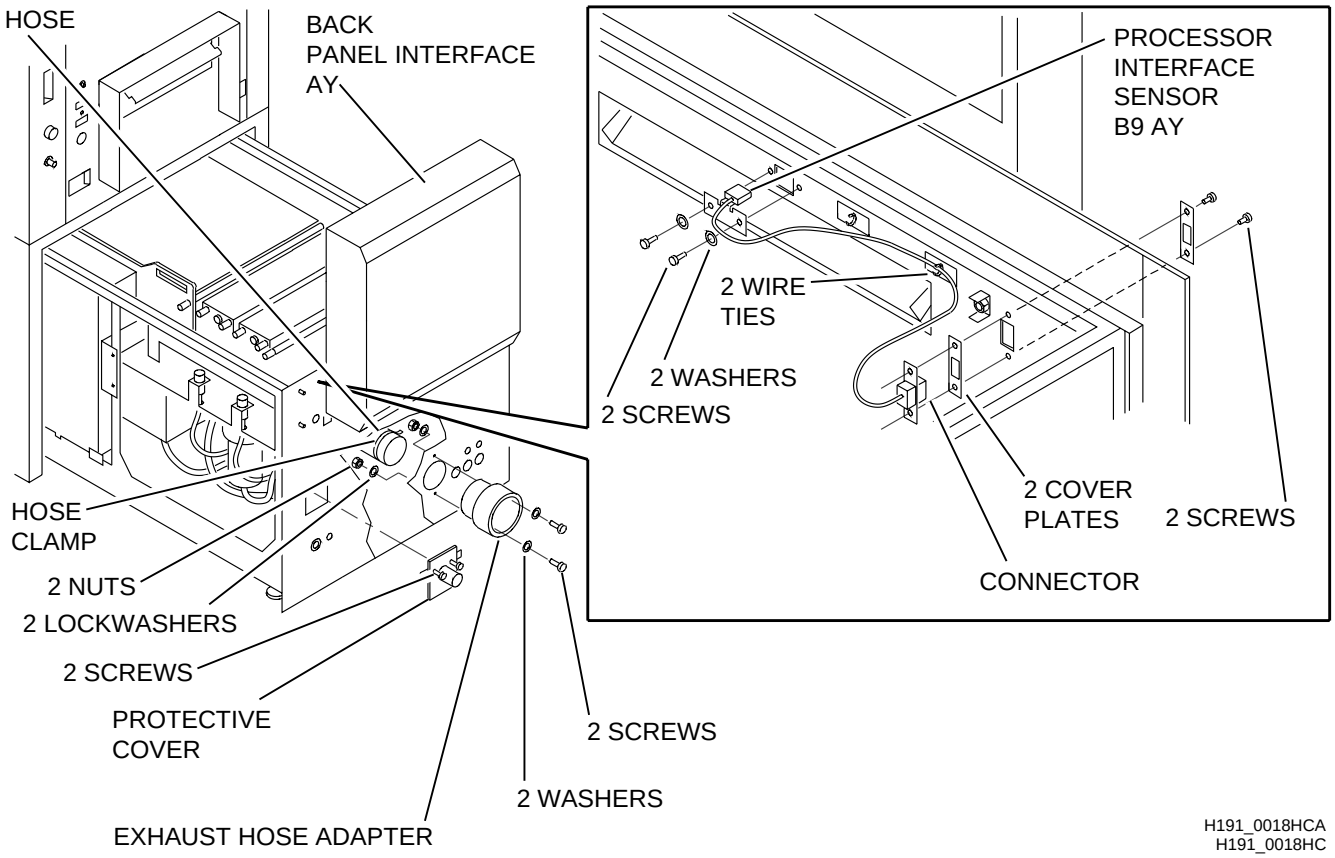
[12] Assemble the new PROCESSOR START/DFF CABLE:

- **(a)** Remove the REMOVABLE STRAP.
- **(b)** Remove and discard the PROCESSOR START CABLE.
- **(c)** Route the new PROCESSOR START/DFF CABLE through the CABLE GUARD AY.
- **(d)** Install the REMOVABLE STRAP.

Note

Do not install the CABLE GUARD AY now.

[13] Place the CABLE GUARD AY in a safe area.



[14] Loosen the 2 SCREWS.

[15] Remove and keep the PROTECTIVE COVER.

[16] Loosen the HOSE CLAMP.

[17] Remove the HOSE from the EXHAUST HOSE ADAPTER.

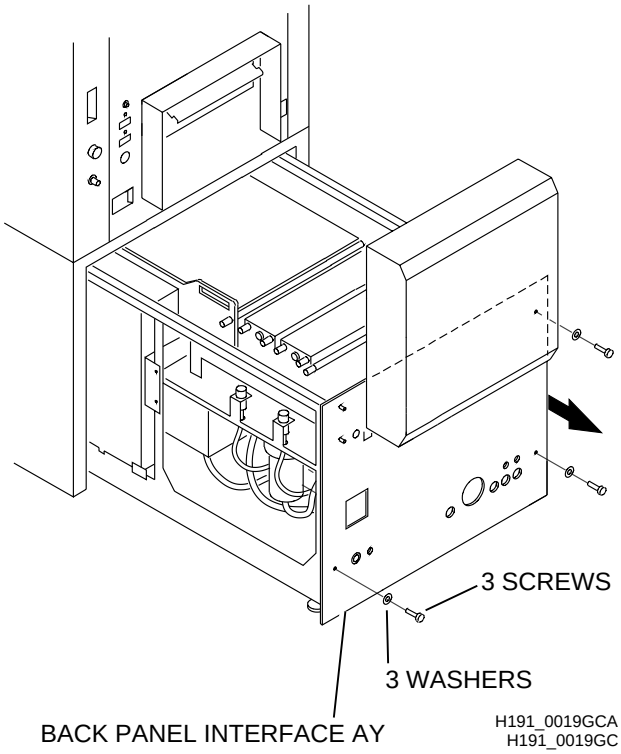
[18] Remove and keep:

- 2 NUTS
- 2 LOCKWASHERS
- 2 SCREWS
- 2 WASHERS
- EXHAUST HOSE ADAPTER

[19] Remove and discard the 2 WIRE TIES.

[20] Remove and keep the following from the BACK PANEL INTERFACE AY:

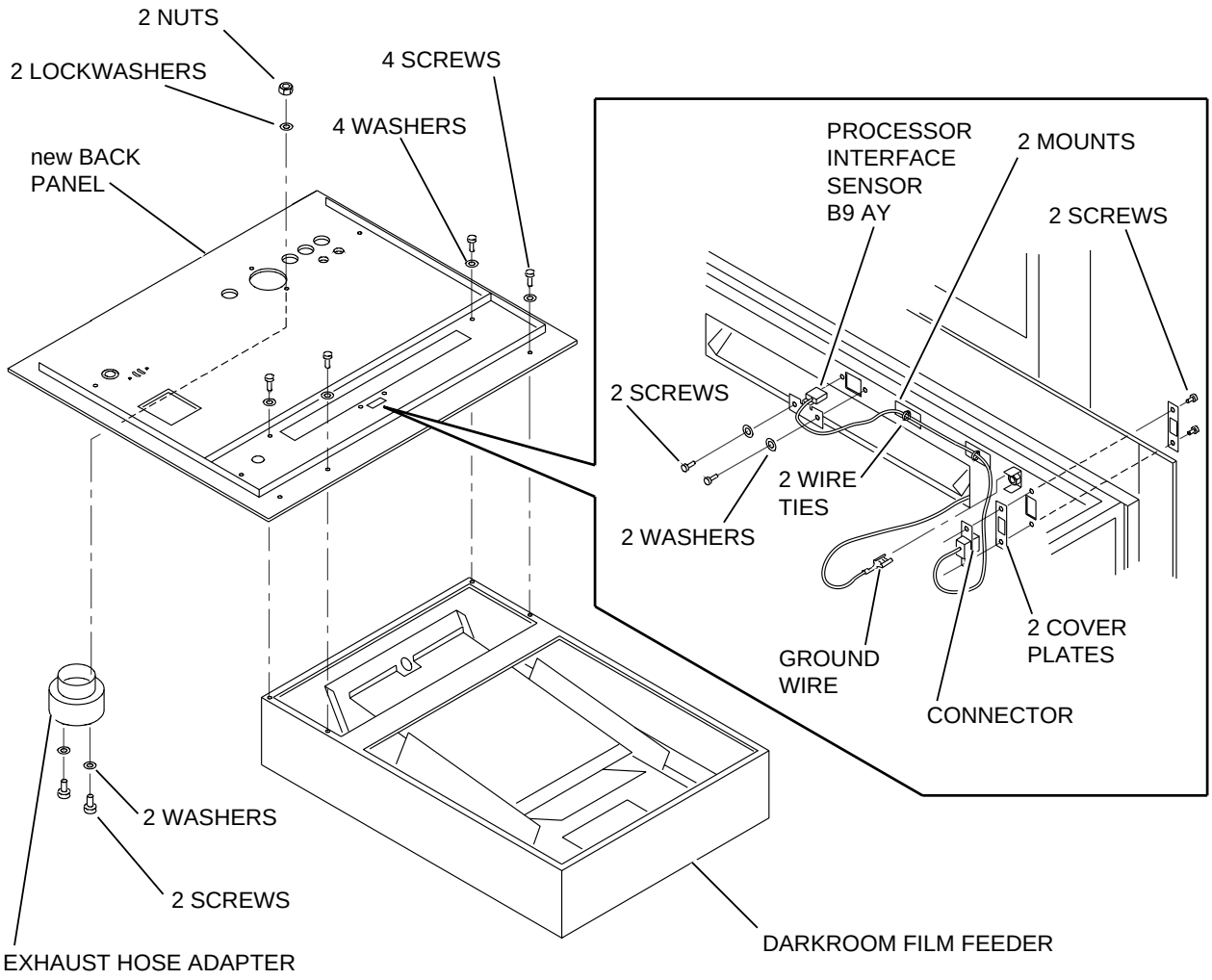
- 2 SCREWS
- 2 WASHERS
- PROCESSOR INTERFACE SENSOR B9 AY
- 2 SCREWS
- 2 COVER PLATES
- CONNECTOR



[21] Remove and keep:

- 3 SCREWS
- 3 WASHERS

[22] Remove and discard the BACK PANEL INTERFACE AY.



H191_0020DCA
H191_0020DC

[23] Install the following parts on the new BACK PANEL:

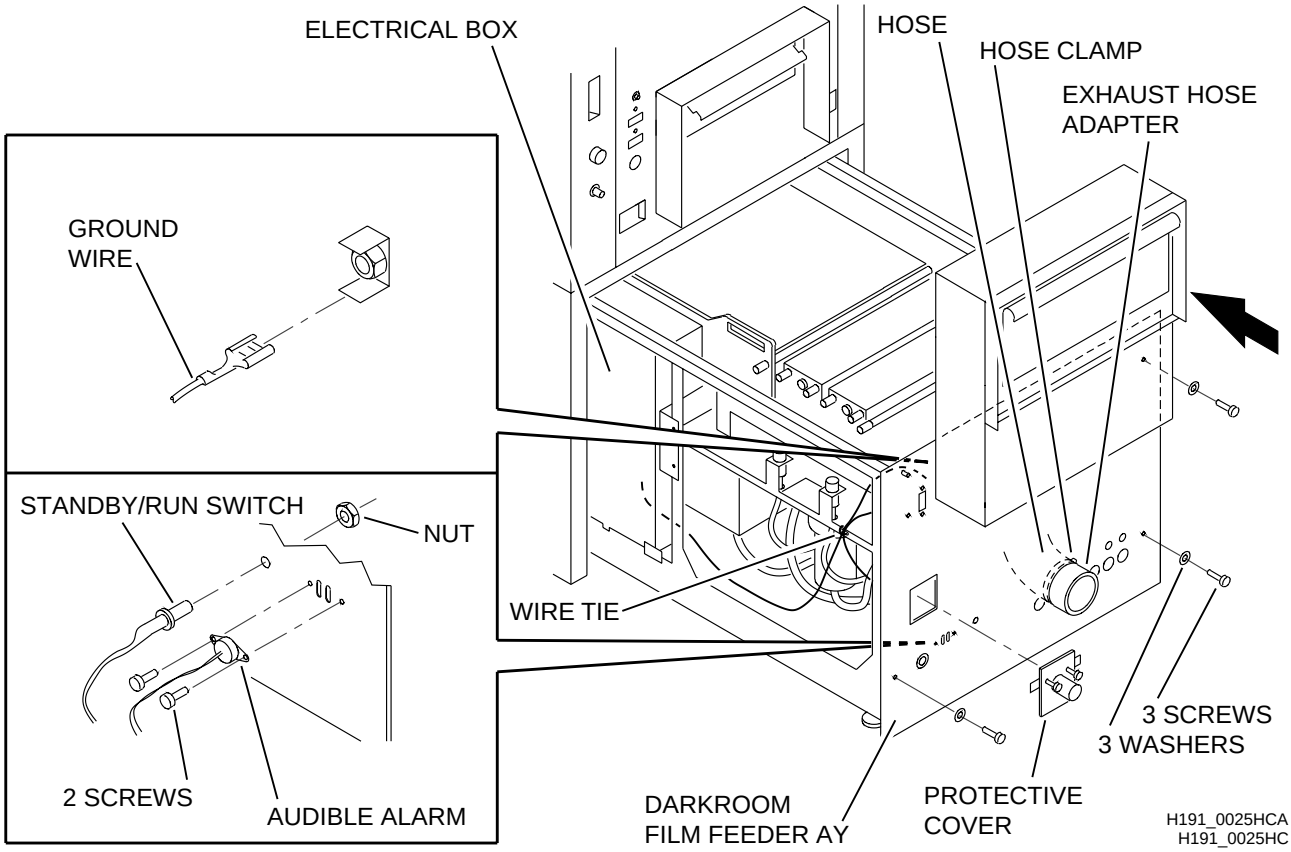
- PROCESSOR INTERFACE SENSOR B9 AY
- 2 WASHERS
- 2 SCREWS
- 2 SCREWS
- CONNECTOR
- 2 COVER PLATES
- 2 MOUNTS
- 2 WIRE TIES
- EXHAUST HOSE ADAPTER
- 2 SCREWS
- 2 WASHERS
- 2 LOCKWASHERS
- 2 NUTS

[24] Place the DARKROOM FILM FEEDER on a flat surface.

[25] Install the BACK PANEL using:

- 4 SCREWS
- 4 WASHERS

[26] Connect the GROUND WIRE from the DARKROOM FILM FEEDER to the BACK PANEL.



[27] Install the DARKROOM FILM FEEDER AY using:

- 3 SCREWS M4 x 20
- 3 WASHERS

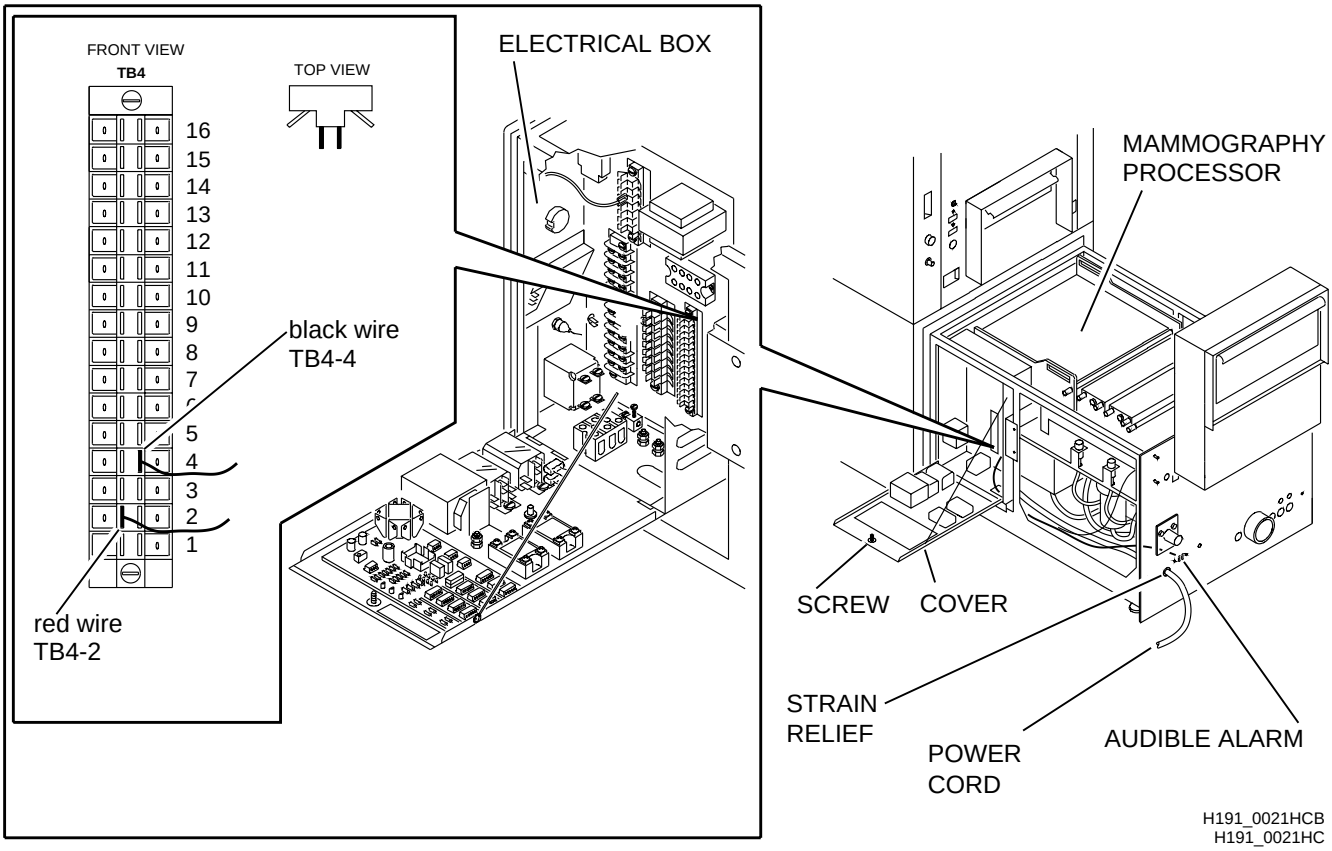
[28] Connect the HOSE to the EXHAUST HOSE ADAPTER.

[29] Install the HOSE CLAMP.

[30] Connect the GROUND WIRE from the ELECTRICAL BOX for the MAMMOGRAPHY PROCESSOR to the DARKROOM FILM FEEDER AY.

[31] Install:

- STANDBY/RUN SWITCH
- NUT
- AUDIBLE ALARM
- 2 SCREWS
- PROTECTIVE COVER
- WIRE TIE



[32] Loosen the SCREW.

[33] Open the COVER for the ELECTRICAL BOX for the MAMMOGRAPHY PROCESSOR.

[34] Connect the wires for the AUDIBLE ALARM:

- black wire to TB4-4
- red wire to TB4-2

Caution

Use the corresponding STRAIN RELIEF for the POWER CORD to comply with local and national electric regulations.

[35] Install the POWER CORD for the MAMMOGRAPHY PROCESSOR.

Note

See “Connecting the POWER CABLE” in the Electrical Setup Section of the INSTALLATION INSTRUCTIONS for the *Kodak Min-R* MAMMOGRAPHY PROCESSOR, Publication No. 3E0817.

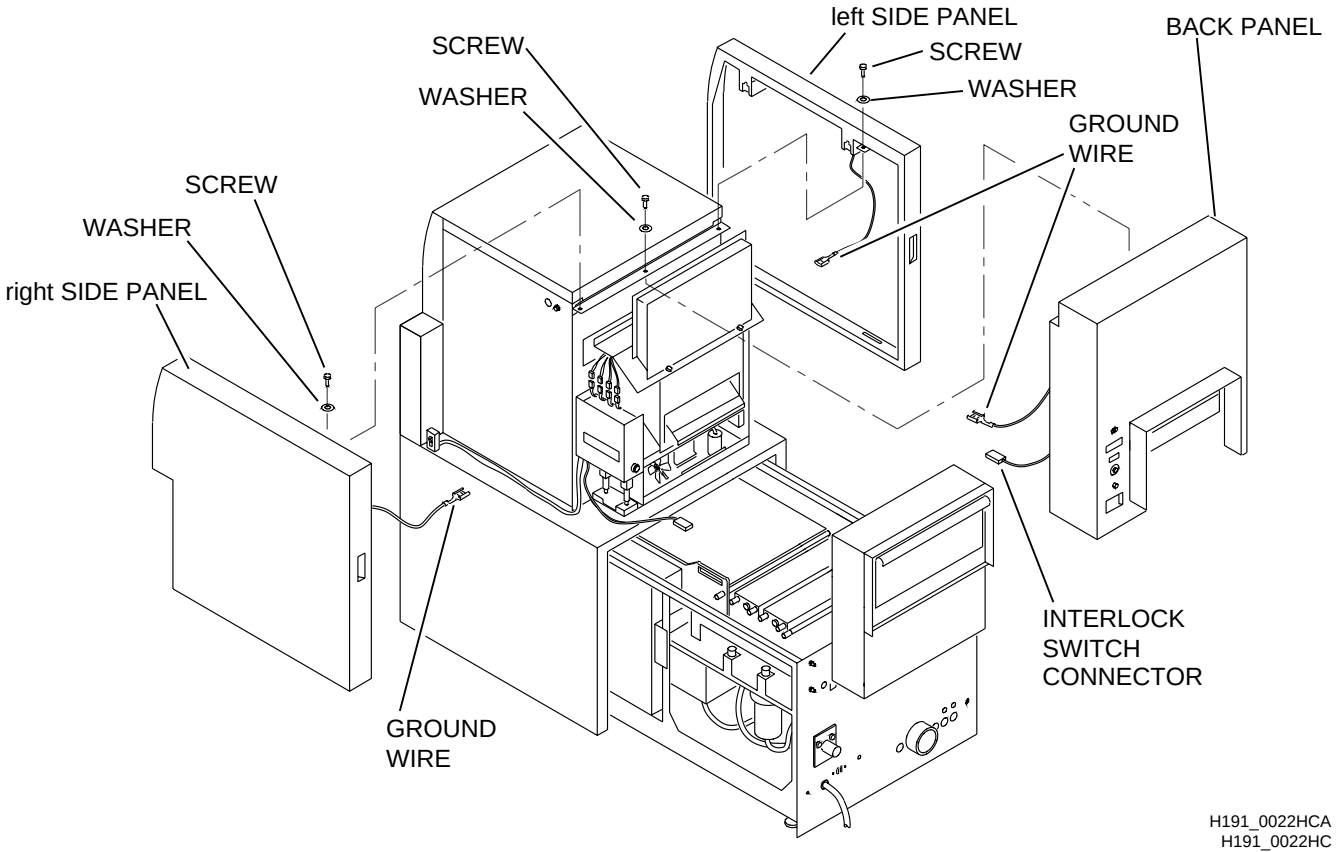
Important

The PROTECTION PANELS for the MAMMOGRAPHY PROCESSOR must be installed in the SLOT between the BACK PANEL and the PROCESSOR.

[36] Install the following parts from Step 3:

- 2 SCREWS
- PROTECTION PANEL
- 3 SCREWS
- PROTECTION PANEL

Installing the New WIRING HARNESS AY



[1] Remove the right and left SIDE PANELS:

(a) Remove:

- SCREW
- WASHER

(b) Lift the SIDE PANEL up to disconnect the GROUND WIRE.

(c) Remove the SIDE PANEL.

[2] Discard the left SIDE PANEL.

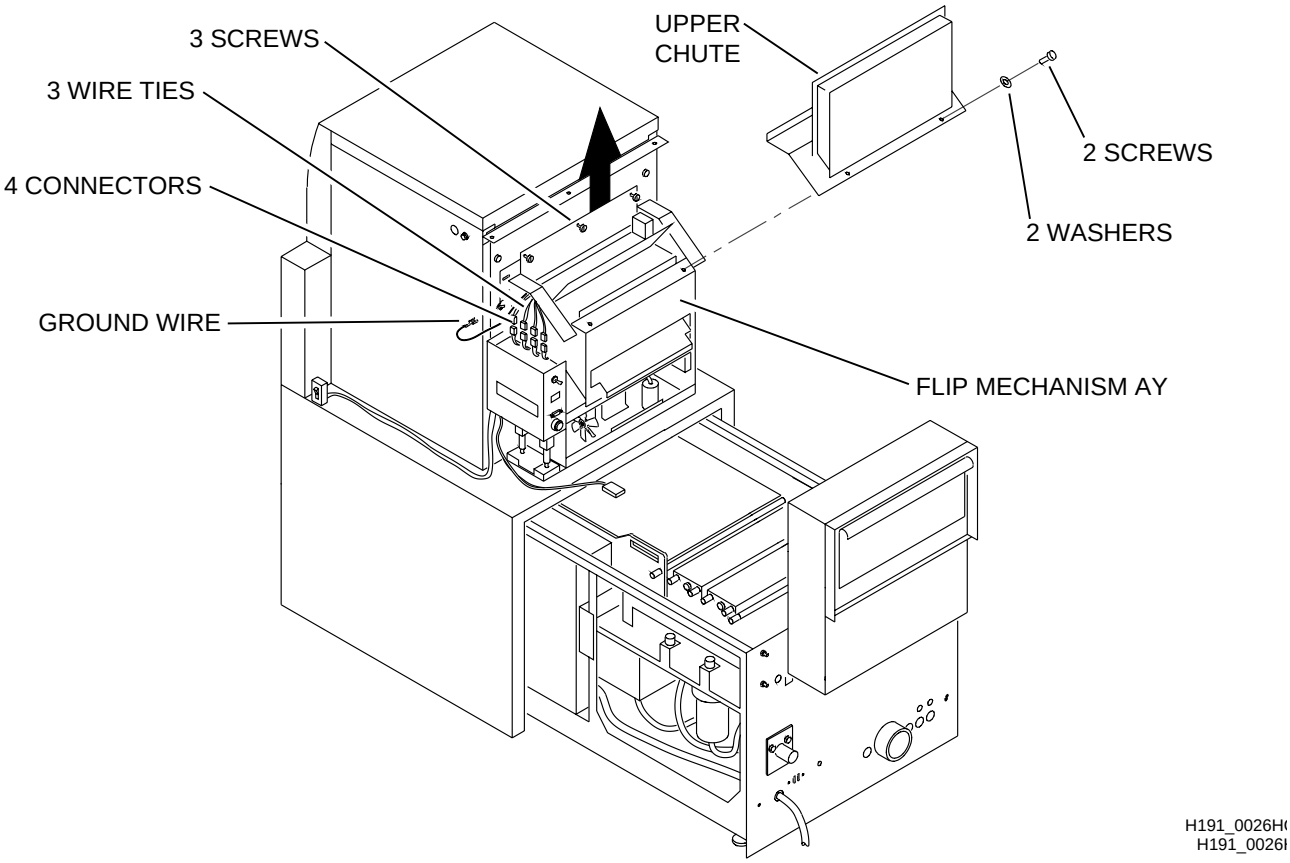
[3] Remove the BACK PANEL:

(a) Disconnect:

- GROUND WIRE
- INTERLOCK SWITCH CONNECTOR

(b) Remove:

- SCREW
- WASHER
- BACK PANEL



[4] Remove:

- 2 SCREWS
- 2 WASHERS
- UPPER CHUTE

[5] Remove the FLIP MECHANISM AY:

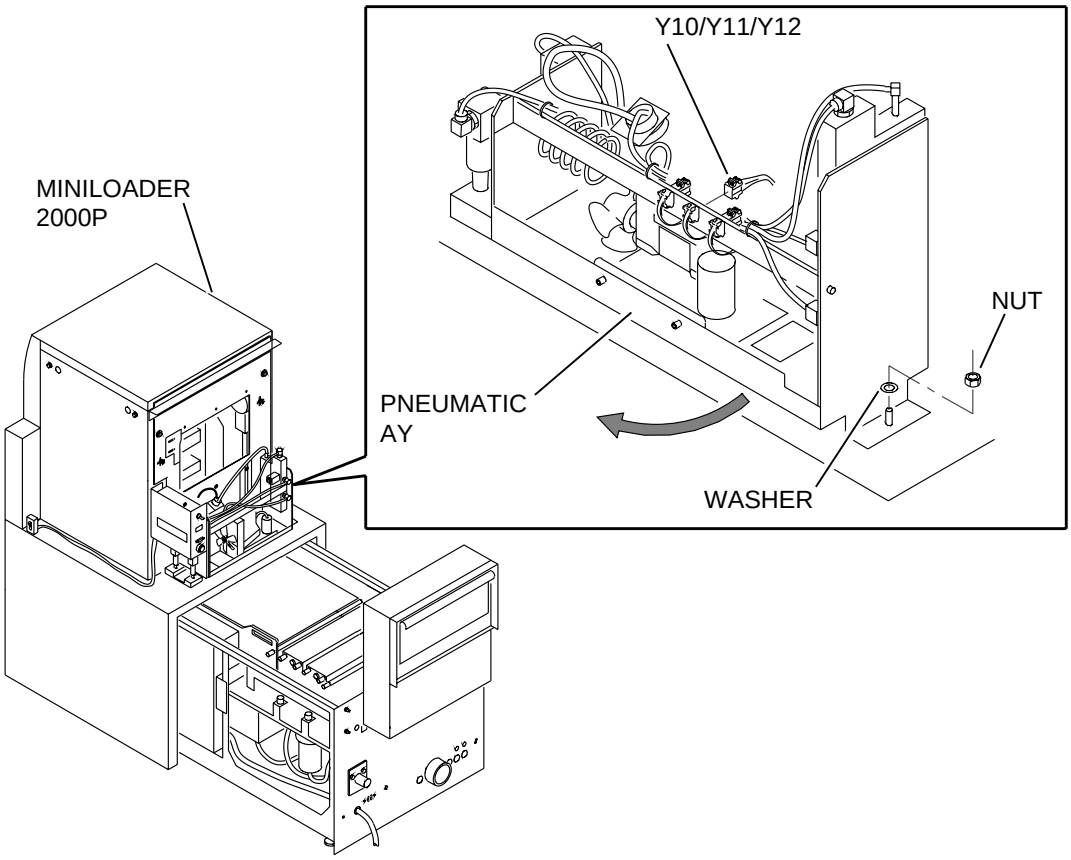
(a) Remove the 3 WIRE TIES.

(b) Disconnect:

- 4 CONNECTORS
- GROUND WIRE

(c) Loosen the 3 SCREWS.

(d) Remove the FLIP MECHANISM AY.



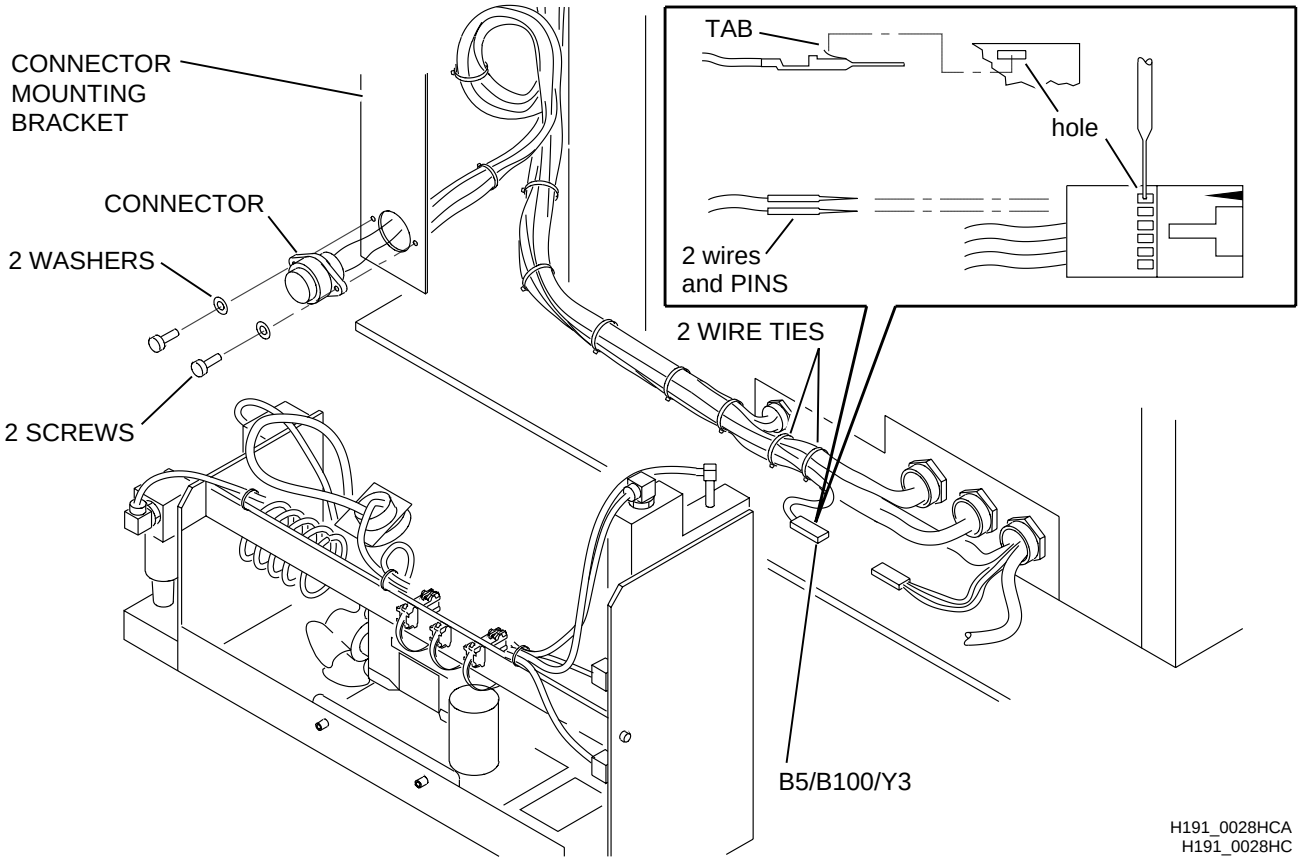
H191_0023HCA
H191_0023HC

[6] Disconnect CONNECTOR Y10/Y11/Y12.

[7] Remove:

- NUT
- WASHER

[8] Lift and move the PNEUMATIC AY up toward the back of the MINILOADER 2000P.



H191_0028HCA
H191_0028HC

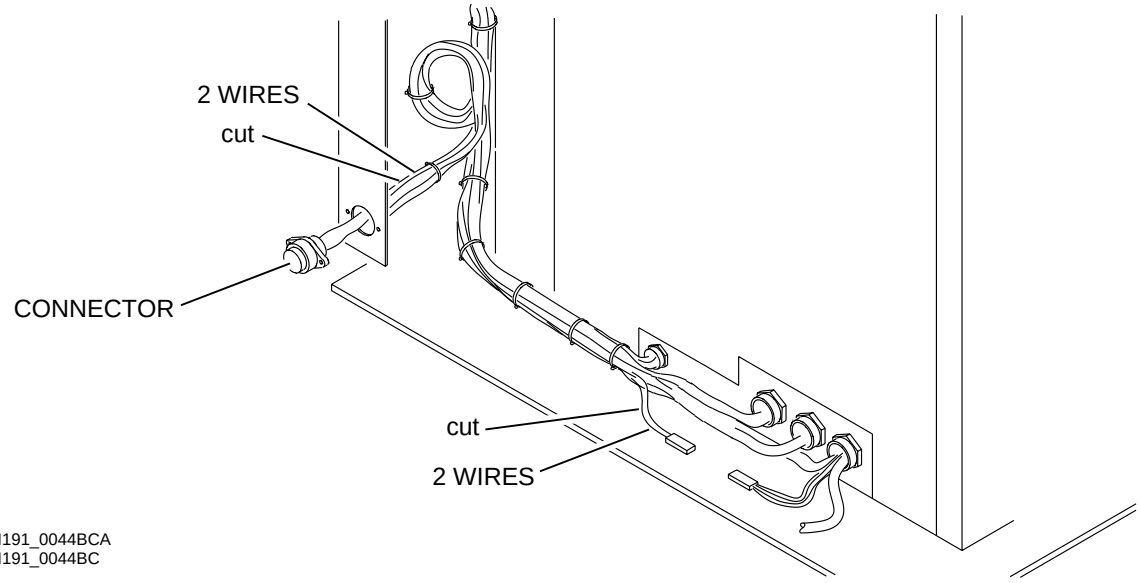
[9] Remove and keep from the CONNECTOR MOUNTING BRACKET:

- 2 SCREWS
- 2 WASHERS

[10] Remove the 2 WIRE TIES.

[11] Disconnect CONNECTOR B5/B100/Y3.

[12] Remove the 2 wires and PINS in positions 1 and 2 by pressing down on the hole to release the TAB.



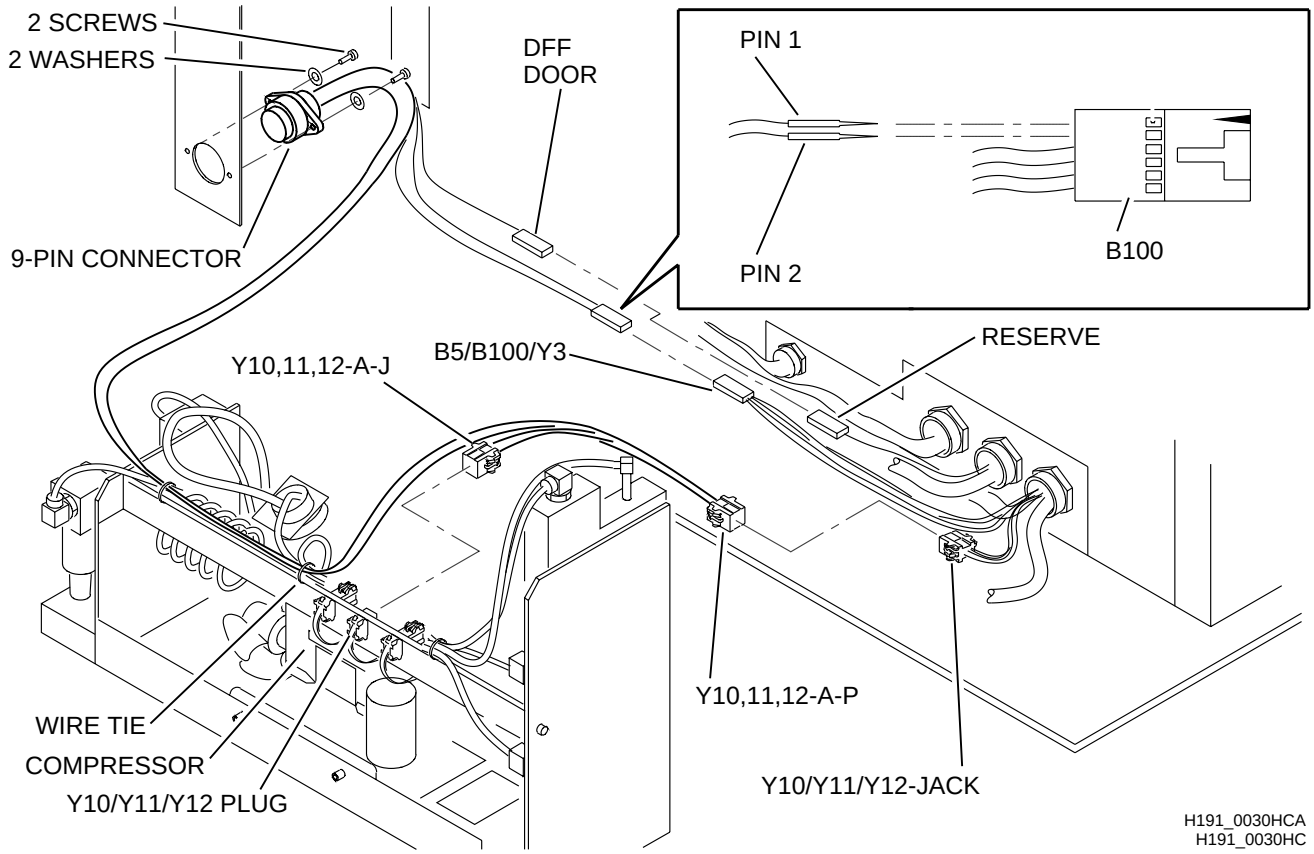
H191_0044BCA
H191_0044BC

[13] Cut:

- 2 WIRES
- 2 WIRES

[14] Discard:

- CONNECTOR with the 2 wires
- 2 wires with PINS from positions 1 and 2



[15] Use the 2 SCREWS and the 2 WASHERS in Step 9 to install the 9-PIN CONNECTOR.

[16] Connect:

From the New WIRE HARNESS:	To the Existing Wiring for the MINILOADER 2000P:
Y10,11,12-A-P	Y10/Y11/Y12-Jack
Y10,11,12-A-J	Y10/Y11/Y12-Plug
DFF DOOR	RESERVE

Important

The wires must not touch the COMPRESSOR.

[17] Install the WIRE TIE.

[18] Install PINS 1 and 2 into CONNECTOR B100:

- blue wire to position 1
- red wire to position 2

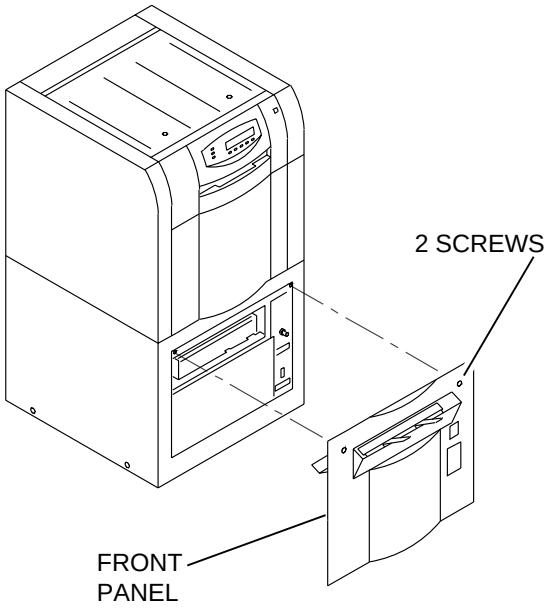
[19] Connect B100 to B5/B100/Y3.

[20] Route the new WIRING HARNESS next to the existing WIRING HARNESS.

[21] Fasten the wires using the WIRE TIES.

[22] To assemble, reverse Steps 1 - 8.

Installing the New FRONT PANEL



H191_0031GCA
H191_0031GC

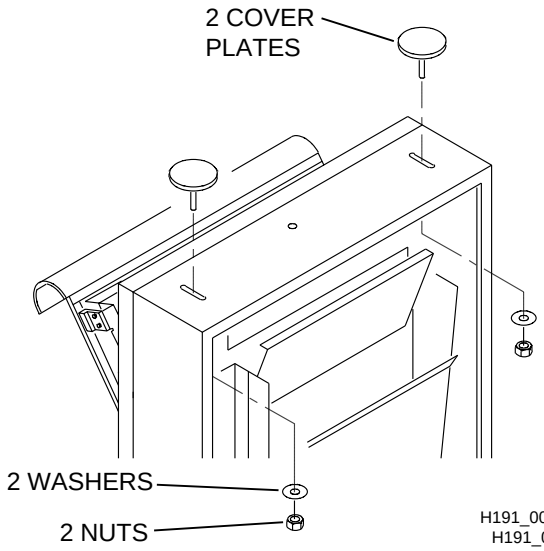
[1] Loosen the 2 SCREWS ¼ rotation.

[2] Remove and discard the FRONT PANEL.

[3] Install the new FRONT PANEL.

[4] Tighten the SCREWS.

[5] If the DARKROOM FILM FEEDER is being installed through the wall, advance to Installing the Wall. If not, continue to Step 6.



H191_0051ACA
H191_0051AC

[6] Install:

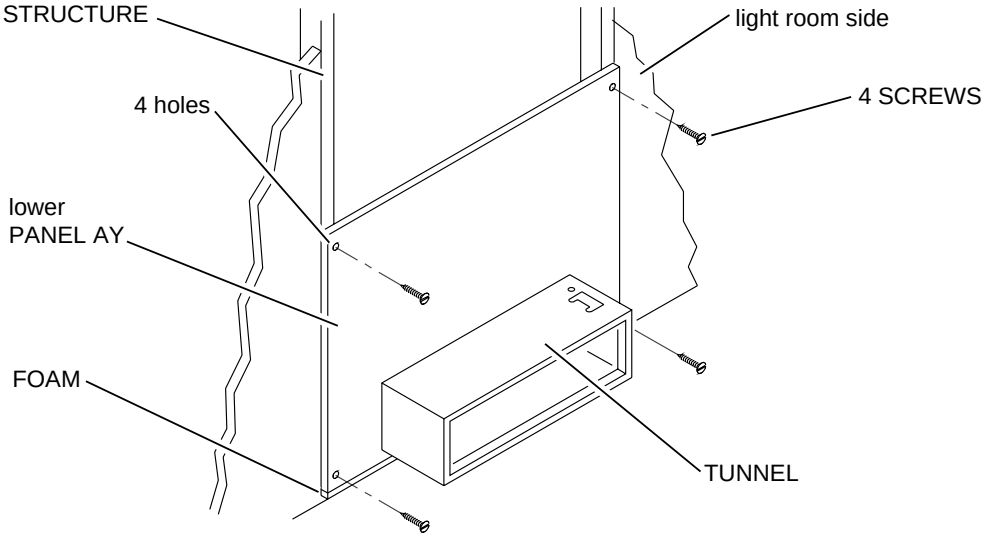
- 2 COVER PLATES
- 2 WASHERS
- 2 NUTS

[7] Do Steps 17, 20, and 21 from Installing the Wall.

[8] Advance to Completing the Installation.

Installing the Wall

[1] Check that the CUTOUT in the wall is correct. See CUTOUT in the Wall.



H191_0034BCA
H191_0034BC

Important

The TUNNEL must be installed on the light room side.

[2] Insert the lower PANEL AY into the correct area on the floor in the CUTOUT.

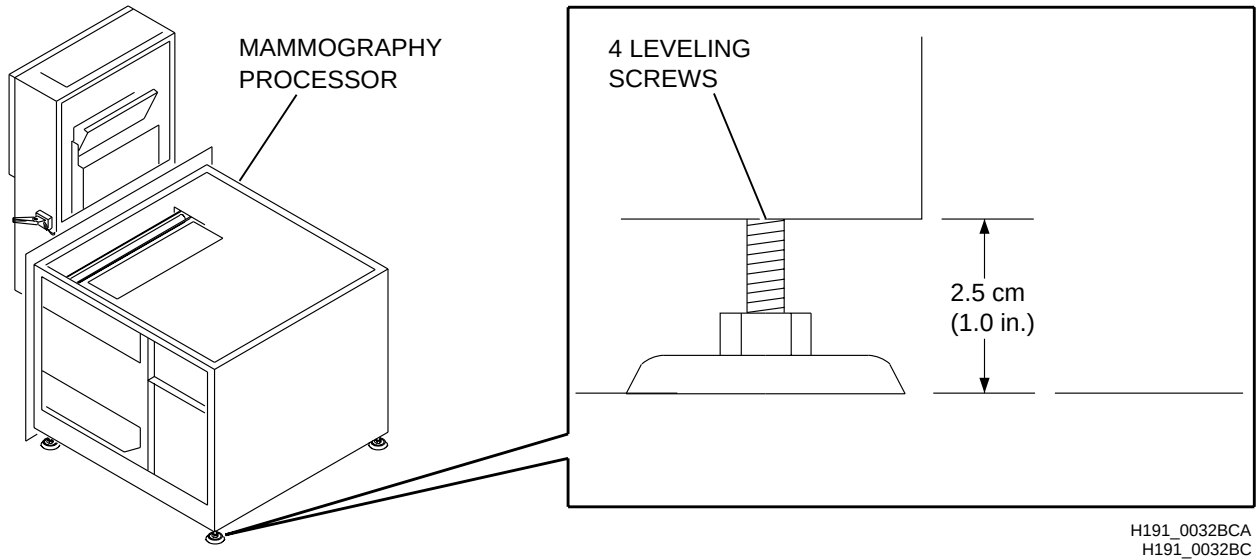
Note

The FOAM must be on the bottom of the lower PANEL AY.

[3] Use the ELECTRIC DRILL TL-1466 to drill 4 holes as indicated through the PANEL AY. Press the ELECTRIC DRILL until a mark is visible on the wall.

[4] Install the 4 SCREWS.

[5] Move the MINILOADER 2000P and STAND from the MAMMOGRAPHY PROCESSOR.

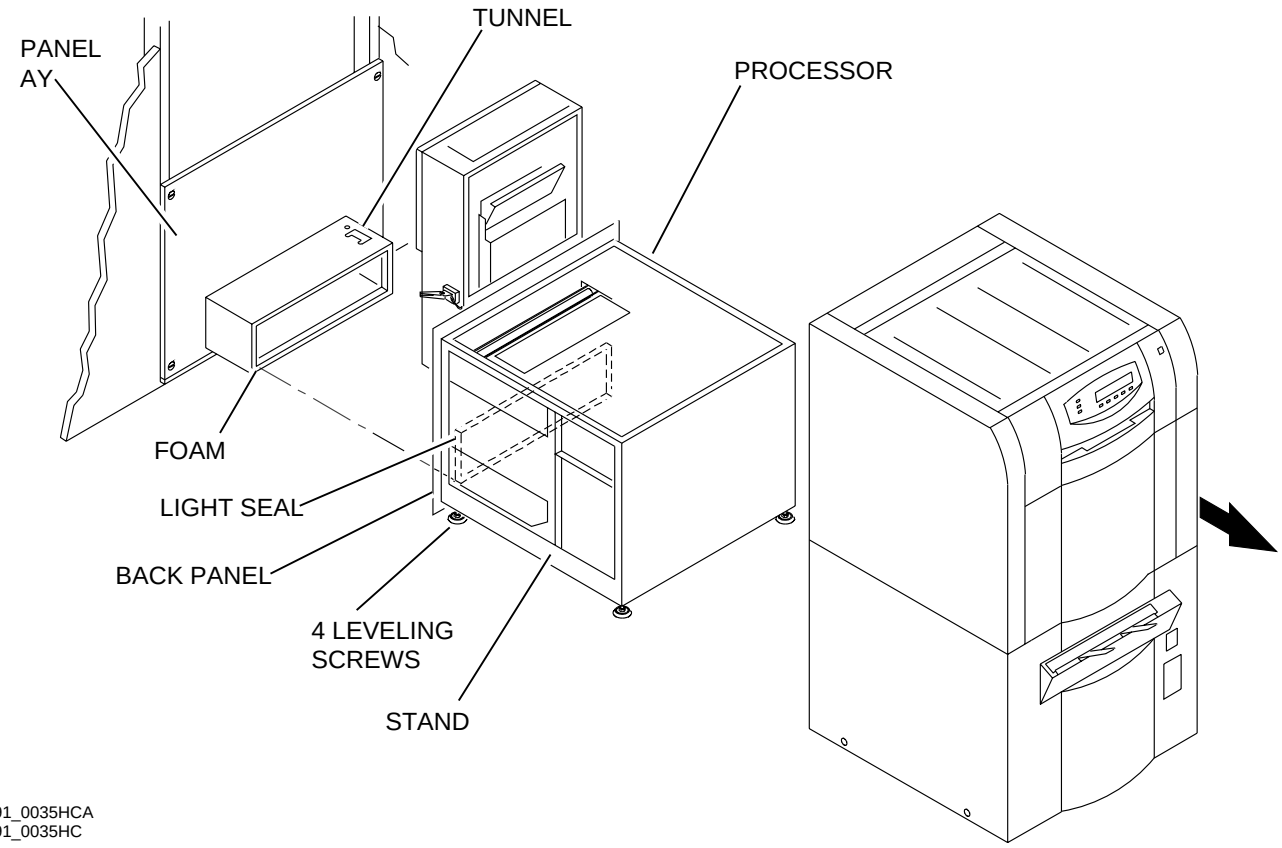


H191_0032BCA
H191_0032BC

Important

The PROCESSOR STAND must be level. See “Leveling the Processor” in the INSTALLATION INSTRUCTIONS for the *Kodak Min-R* MAMMOGRAPHY PROCESSOR, Publication No. 3E0817.

[6] Adjust the 4 LEVELING SCREWS of the MAMMOGRAPHY PROCESSOR until there is a distance of 2.5 cm (1.0 in.) between the floor and the bottom of the STAND.



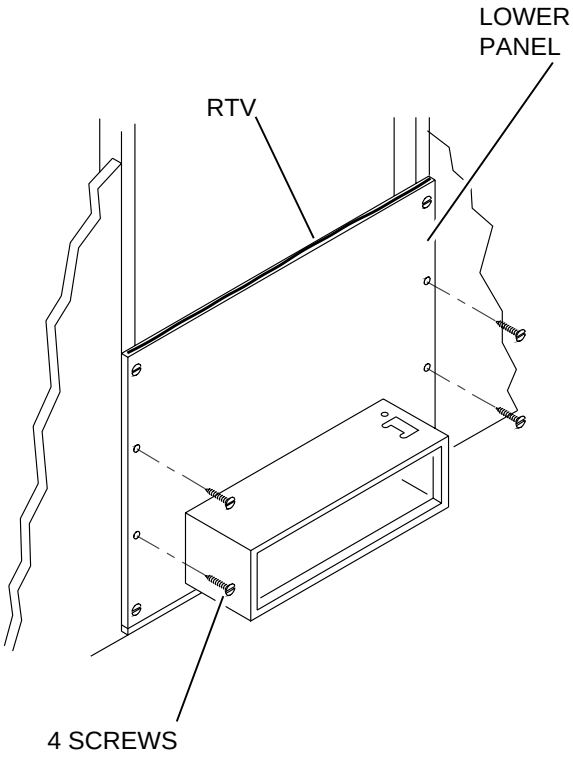
H191_0035HCA
H191_0035HC

[7] Move the MAMMOGRAPHY PROCESSOR to align it with the TUNNEL of the lower PANEL AY.

[8] Adjust the LEVELING SCREWS to allow the LIGHT SEAL on the BACK PANEL to align with the inside FOAM of the TUNNEL.

[9] If the adjustment is not correct using the LEVELING SCREWS, remove the SCREWS in Step 4, and move the lower PANEL AY.

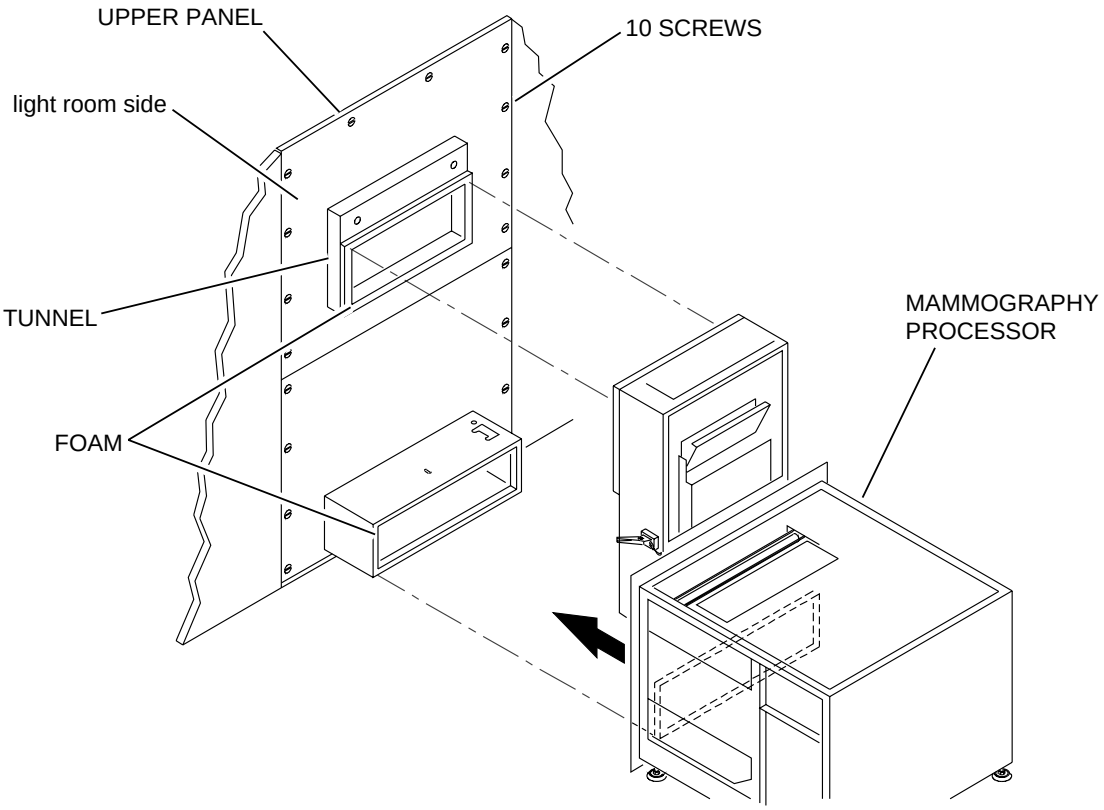
[10] Move the MAMMOGRAPHY PROCESSOR from the wall.



H191_0036GCA
H191_0036GC

[11] Install the 4 SCREWS.

[12] Apply RTV to the top edge of the LOWER PANEL.



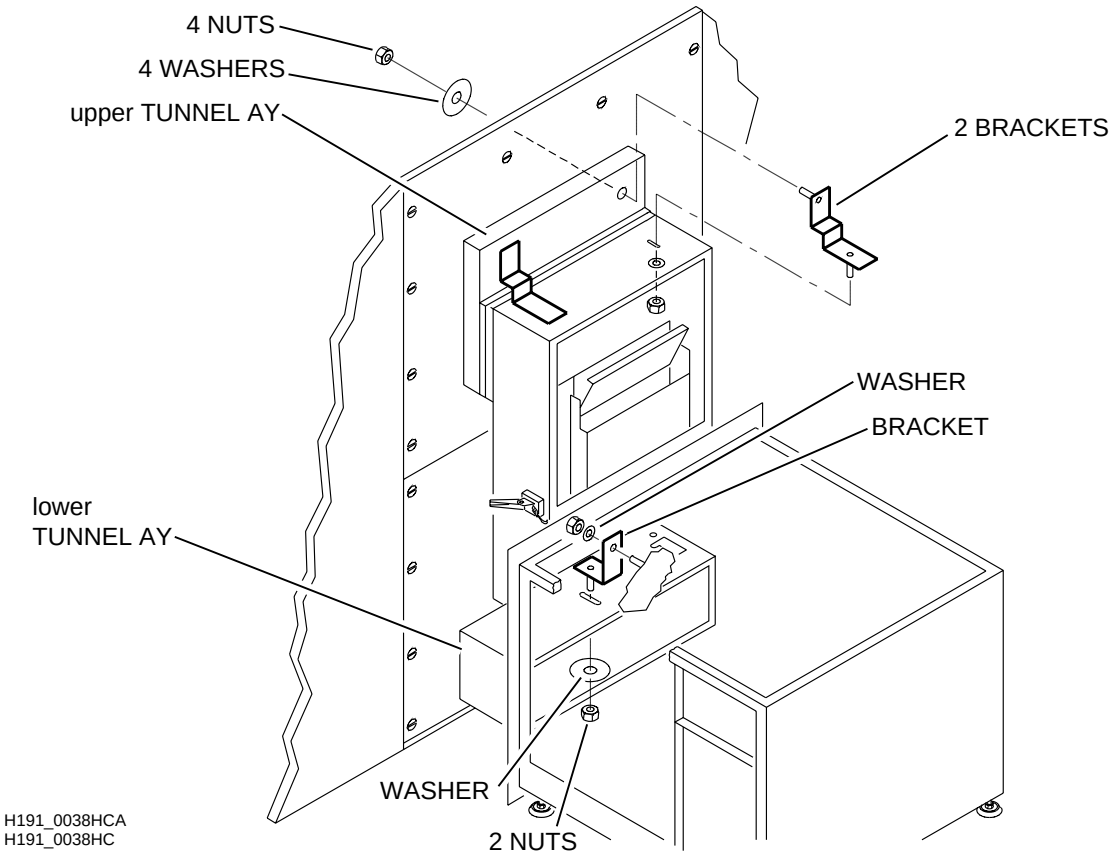
H191_0037HCA
H191_0037HC

Important

The TUNNEL must be installed on the light room side.

[13] Install the UPPER PANEL using the 10 SCREWS.

[14] Move the MAMMOGRAPHY PROCESSOR into the correct position at the wall compressing the FOAM.



[15] Install the following on the upper TUNNEL AY:

- 2 BRACKETS
- 4 WASHERS
- 4 NUTS

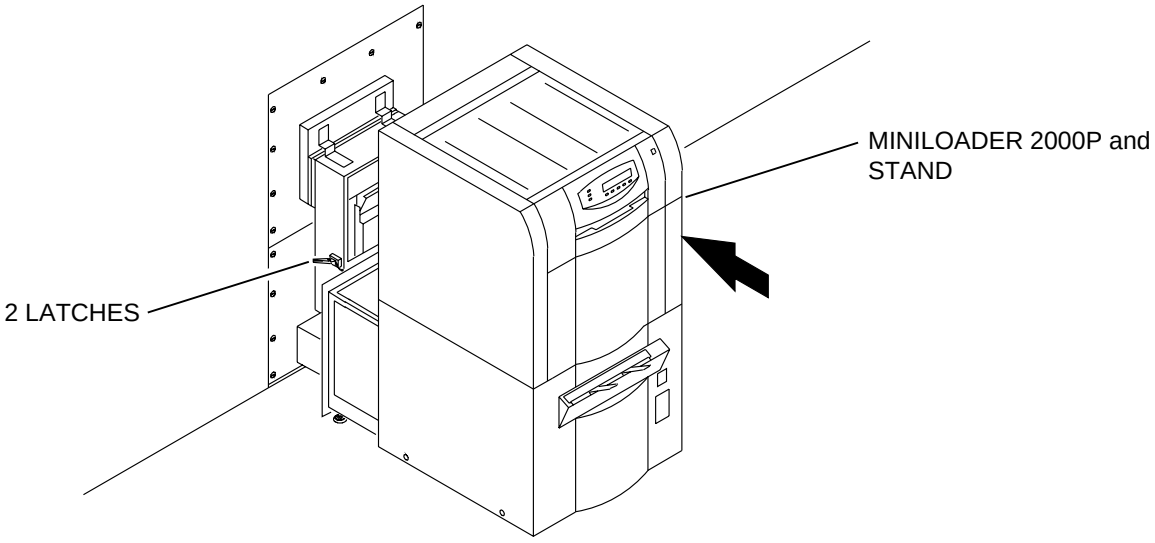
[16] Install the following on the lower TUNNEL AY:

- BRACKET
- 2 WASHERS
- 2 NUTS

[17] Connect the electrical, plumbing, and exhaust services.

Note

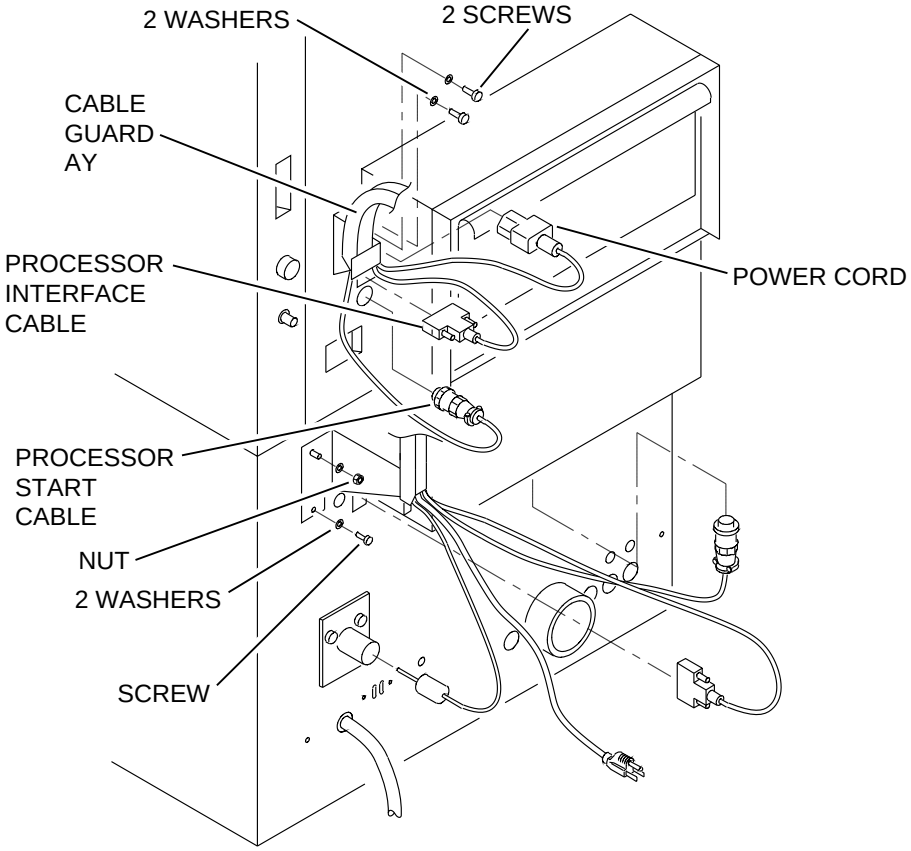
See “Electrical Setup”, “Connecting the Plumbing”, and “Checking the Negative Pressure” in the INSTALLATION INSTRUCTIONS for the *Kodak Min-R* MAMMOGRAPHY PROCESSOR, Publication No. 3E0817.



H191_0039BCA
H191_0039BC

[18] Move the MINILOADER 2000P and STAND in position.

[19] Fasten the 2 LATCHES.



H191_0047HCA
H191_0047HC

[20] Install:

- 2 SCREWS
- 2 WASHERS
- SCREW
- NUT
- CABLE GUARD AY

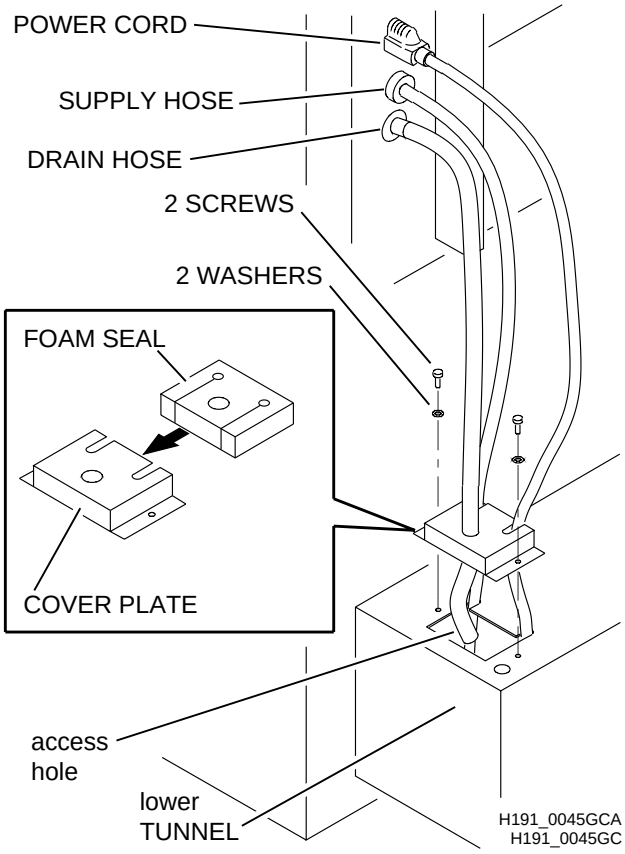
Important

The POWER CORD for the MINILOADER 2000P must be routed through the access hole for the lower TUNNEL.

[21] Connect:

- PROCESSOR START/DFF CABLE
- PROCESSOR INTERFACE CABLE
- POWER CORD for the MINILOADER 2000P

[22] If the *Kodak* MINILOADER 2000P HUMIDIFIER is installed, continue with Steps 23 - 25, and advance to Completing the Installation. If not, advance to Step 26.



[23] Route the DRAIN HOSE through the black plastic.

Important

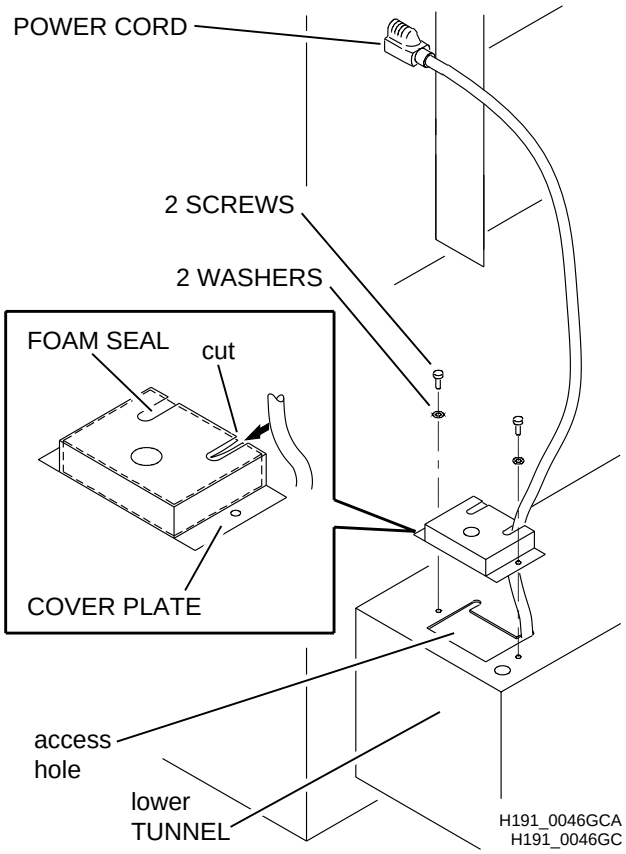
Use the FOAM SEAL with holes.

[24] Route the following through the COVER PLATE, FOAM SEAL, and access hole for the lower TUNNEL:

- SUPPLY HOSE
- DRAIN HOSE
- POWER CORD for the MINILOADER 2000P

[25] Install:

- 2 SCREWS
- 2 WASHERS
- COVER PLATE
- FOAM SEAL



[26] Assemble the COVER PLATE and the FOAM SEAL without holes together.

[27] Cut the FOAM SEAL. See the graphic.

[28] Route the POWER CORD for the MINILOADER 2000P through:

- COVER PLATE
- FOAM SEAL
- access hole for the lower TUNNEL

[29] Install:

- COVER PLATE
- FOAM SEAL
- 2 WASHERS
- 2 SCREWS

Completing the Installation

[1] Is the service software on your LAPTOP COMPUTER Version 1.21 or higher?

Yes	No
Continue to Step 2.	• Install the service software packed with the DARKROOM FILM FEEDER. • Continue to Step 2. See “Preparation of Laptop” in the INSTALLATION INSTRUCTIONS for the *Kodak* MINILOADER 2000P, Publication No. II3477-2.

[2] Is the operating software on the MINILOADER 2000P Version 2.36 or higher?

Yes	No
Continue to Step 3.	• Install the operating software packed with the DARKROOM FILM FEEDER. • Continue to Step 3. See “Preparation of the Laptop” in the INSTALLATION INSTRUCTIONS for the *Kodak* MINILOADER 2000P, Publication No. II3477-2.

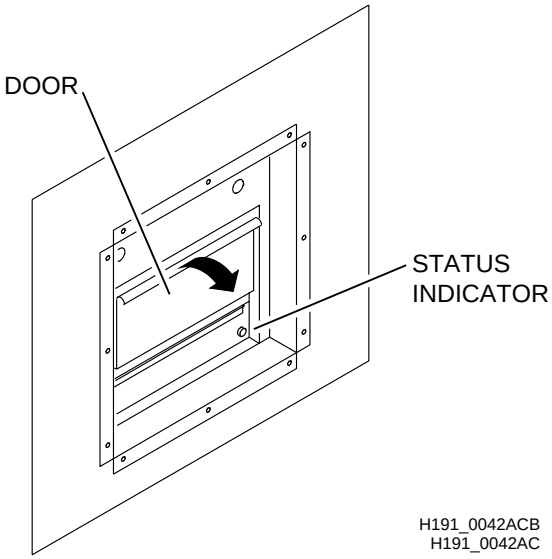
[3] To enable the DARKROOM FILM FEEDER use the service software to set the Miniloader Parameter “DFF Present” to 01.

[4] Exit the service software.

[5] Check for light leakage. Use BLACK SEALANT 1C8002 and FOAM to block any light.

[6] Check the adjustment of the B9 SENSOR. See “Adjustment of Sensor B9, Processor Interface” in the INSTALLATION INSTRUCTIONS for the *Kodak* MINILOADER 2000P, Publication No. II3477-2.

Checking for Correct Operation



[1] Check that the DOOR on the DARKROOM FILM FEEDER is locked when the MINILOADER 2000P is de-energized.

Warning

Dangerous Voltage

[2] Energize the MINILOADER 2000P. The DOOR can be opened when the STATUS INDICATOR on the DARKROOM FILM FEEDER is green.

Note

The STATUS INDICATOR has low brightness and might be visible only in low light or darkroom conditions.

[3] Open the DOOR on the DARKROOM FILM FEEDER.

[4] Insert a film into the DARKROOM FILM FEEDER.

[5] Wait until a beep indicates that the trailing edge of the film is recognized by the DETECTOR ROLLERS.

[6] Insert another film into the DARKROOM FILM FEEDER.

[7] Close the DOOR.

[8] Check:

- STATUS INDICATOR on the DARKROOM FILM FEEDER is red and the DOOR is locked
- DISPLAY PANEL indicates that the DARKROOM FILM FEEDER is in use when film is in the DARKROOM FILM FEEDER and the MAMMOGRAPHY PROCESSOR
- STATUS INDICATOR on the DARKROOM FILM FEEDER is green after a beep indicates that the trailing edge of the film is recognized by the DETECTOR ROLLERS
- all films reach the RECEIVING BIN

Section 3: Additional Service Procedures

Safety Tests

[1] Use a SAFETY TESTER and check:

- Ground Resistance Test is <0.1Ω between the POWER CORD GROUND CONDUCTOR and all grounded components and parts.
- Insulation Resistance Test is 2MΩ.

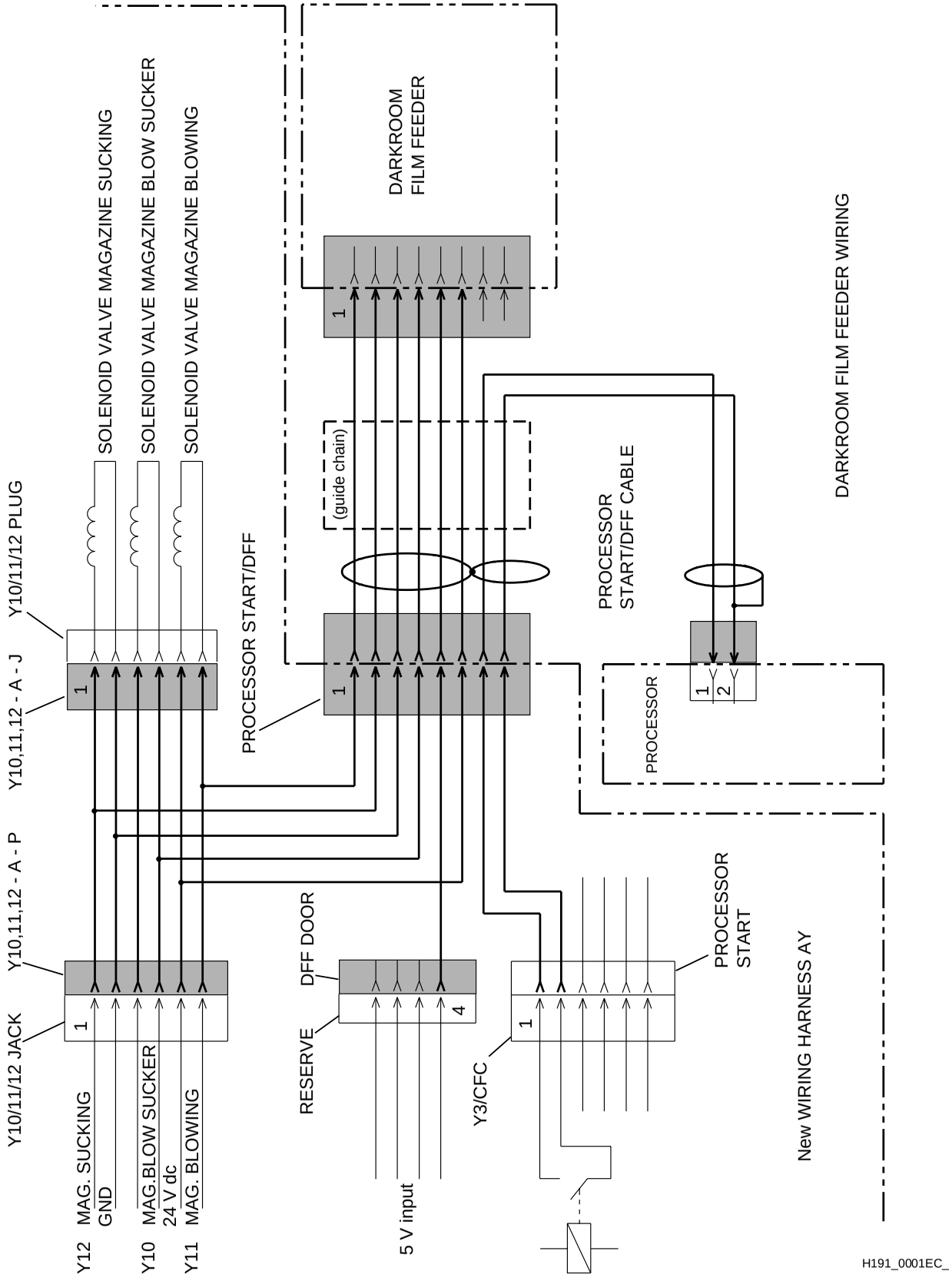
[2] Check that the PANELS and the COVERS are installed and connected to ground correctly.

[3] Check:

- the INTERLOCK SWITCH operates correctly
- the STRAIN RELIEF is fastened securely

Section 4: Diagrams

WIRING HARNESS AY



Section 5: Illustrated Parts List

Figure 1 DARKROOM FILM FEEDER AY

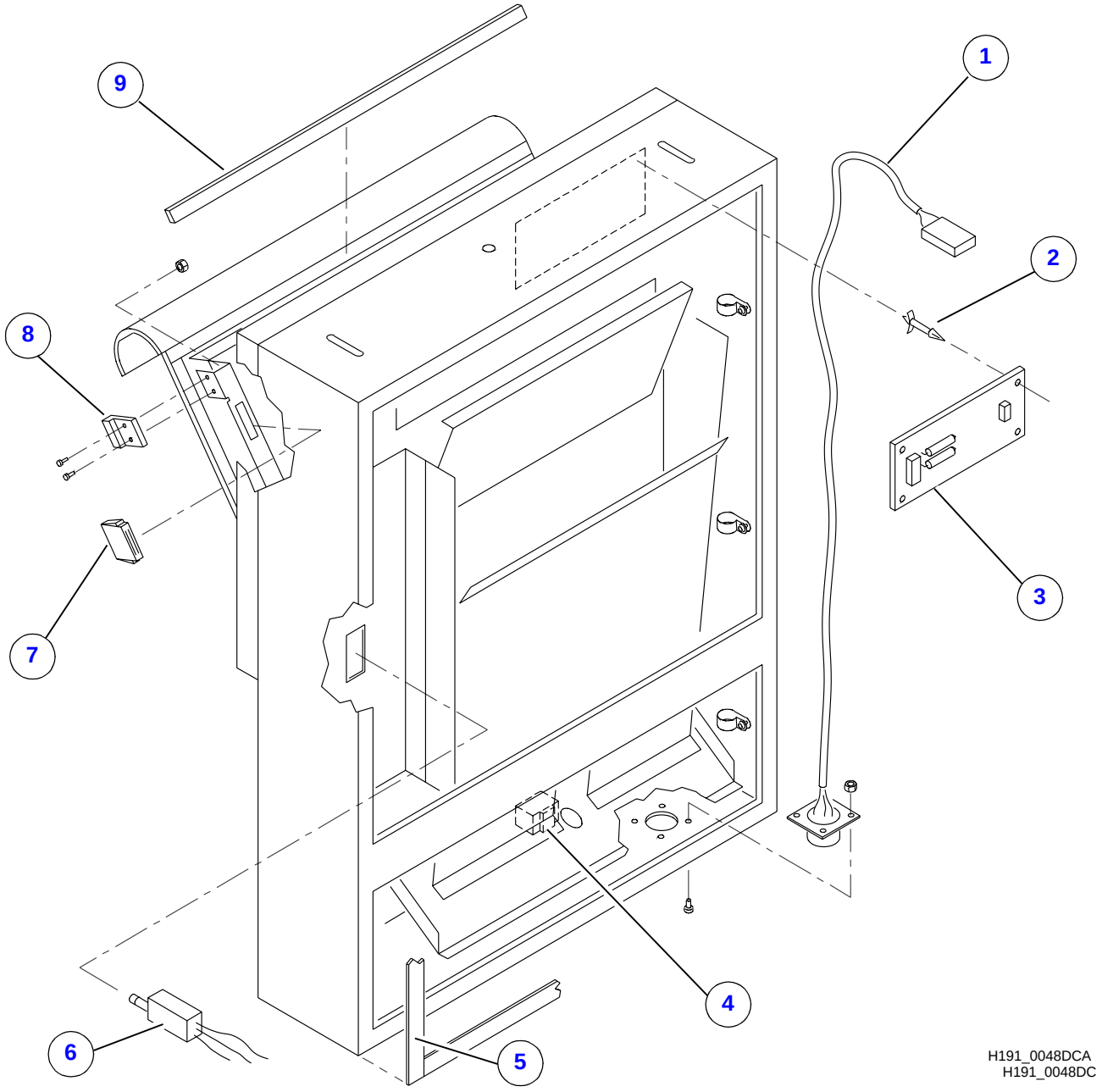
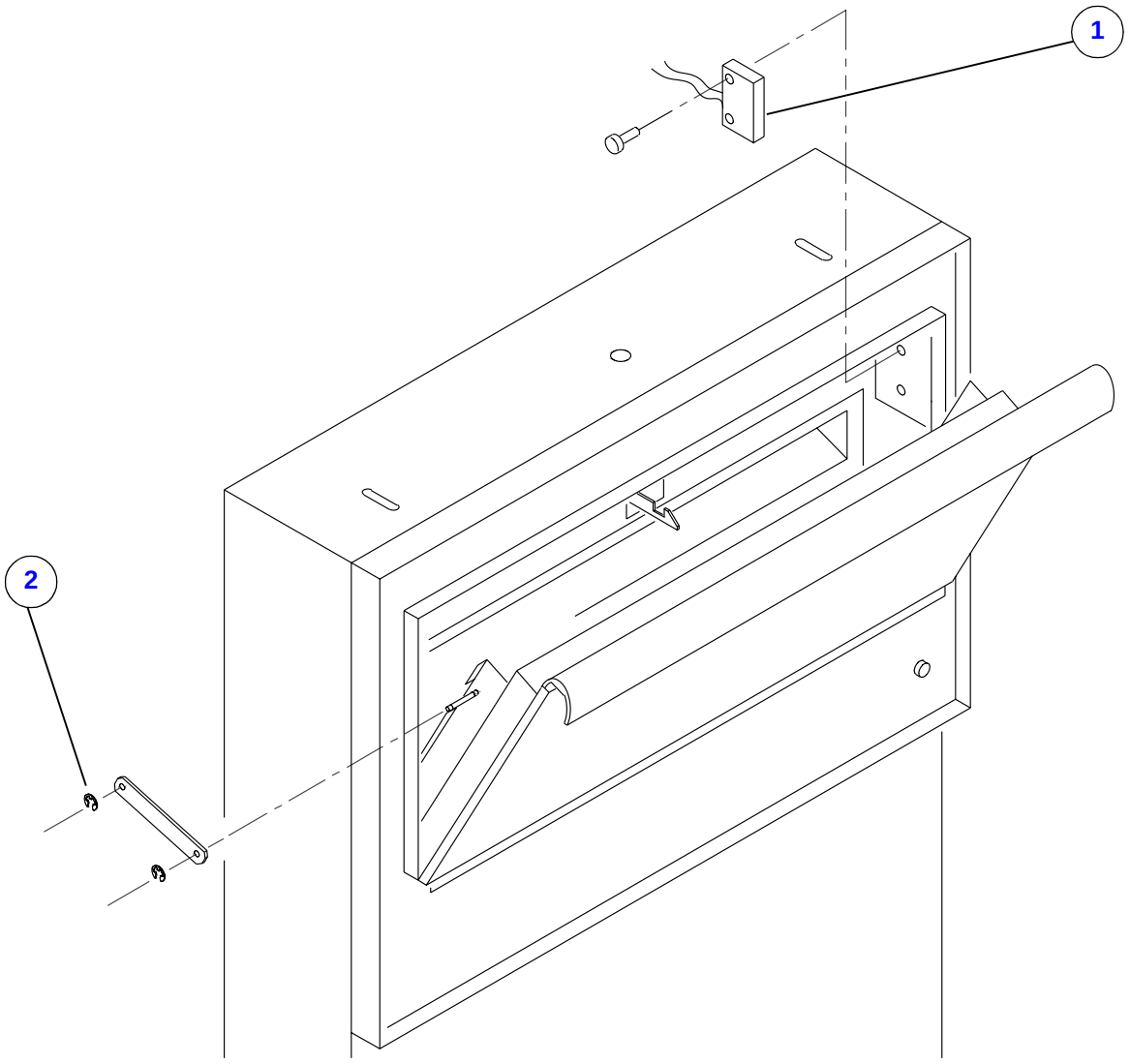


Figure 1 DARKROOM FILM FEEDER AY

Item	Part No.	Description	Qty.	Notes
1	4E9242	CABLE AY - darkroom film feeder to board	1	
2	9351451	STAND-OFF - board	4	
3	9351004	BOARD - darkroom film feeder	1	
4	9350321	MIRROR - sensor B9	1	
5	9350861	FOAM - long	4	longest length used
6	9250181	LED	1	
7	203685	MAGNET	2	
8	9261651	MAGNET - reed	1	
9	9350371	GASKET - long	1	longest length used

Figure 2 DOOR AY

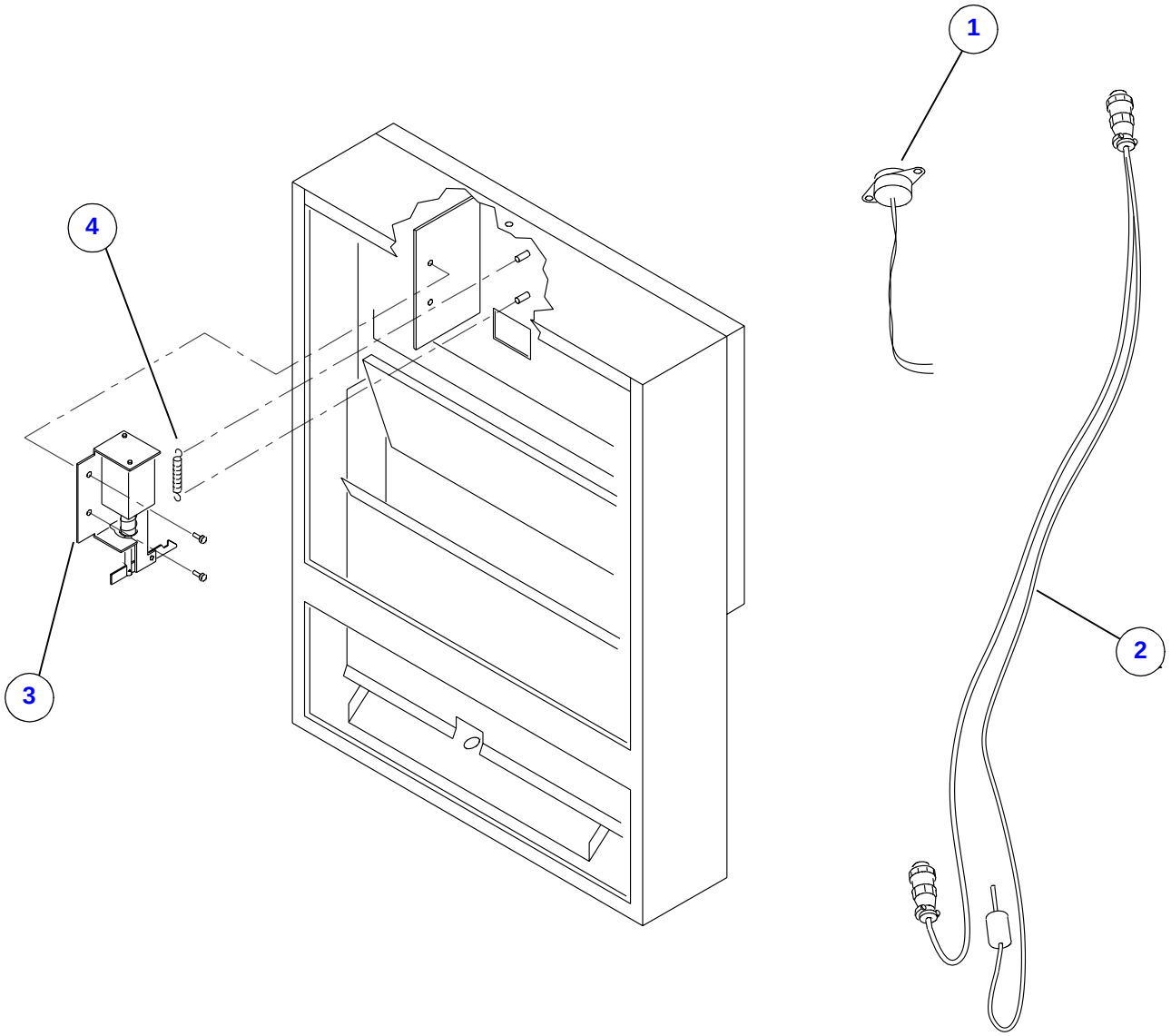


H191_0049DCA
H191_0049DC

Figure 2 DOOR AY

Item	Part No.	Description	Qty.	Notes
1	4E9245	SWITCH	1	
2	9350781	E-RING	2	
	9350561	FOAM - tunnel light seal	1	not visible in graphic
	9351301	FOAM - wood to wall	1	not visible in graphic

Figure 3 AUDIBLE ALARM, CABLE AY, and SOLENOID AY

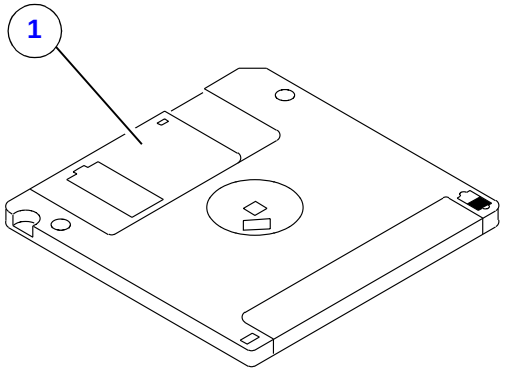


H191_0050DCA
H191_0050DC

Figure 3 AUDIBLE ALARM, CABLE AY, and SOLENOID AY

Item	Part No.	Description	Qty.	Notes
1	4E9243	ALARM - audible	1	
2	4E9241	CABLE AY - processor start/dff	1	
3	9250474	SOLENOID AY	1	
4	9350841	SPRING	1	
	4E9240	CABLE AY - miniloader to processor start/dff	1	not visible in graphic

Figure 4 Software



H191_0054ACA
H191_0054AC

Figure 4 Software

Item	Part No.	Description	Qty.	Notes
1	9312366	DISK - service/operational software download for miniloaders	1	

Section 6: Numerical Index

Numerical Index

Part No.	Description	Figure No.
203685	MAGNET	1
4E9240	CABLE AY - miniloader to processor start/dff	3
4E9241	CABLE AY - processor start/dff	3
4E9242	CABLE AY - darkroom film feeder to board	1
4E9243	ALARM - audible	3
4E9245	SWITCH	2
9250181	LED	1
9250474	SOLENOID AY	3
9261651	MAGNET - reed	1
9312366	DISK - service/operational software download for miniloaders	4
9350321	MIRROR - sensor B9	1
9350371	GASKET - long	1
9350561	FOAM - tunnel light seal	2
9350781	E-RING	2
9350841	SPRING	3
9350861	FOAM - long	1
9351004	BOARD - darkroom film feeder	1
9351301	FOAM - wood to wall	2
9351451	STAND-OFF - board	1

Section 7: Alphabetical Index

Alphabetical Index

Part No.	Description	Figure No.
4E9243	ALARM - audible	3
9351004	BOARD - darkroom film feeder	1
4E9242	CABLE AY - darkroom film feeder to board	1
4E9240	CABLE AY - miniloader to processor start/dff	3
4E9241	CABLE AY - processor start/dff	3
9312366	DISK - service/operational software download for miniloaders	4
9350781	E-RING	2
9350861	FOAM - long	1
9350561	FOAM - tunnel light seal	2
9351301	FOAM - wood to wall	2
9350371	GASKET - long	1
9250181	LED	1
9261651	MAGNET - reed	1
203685	MAGNET	1
9350321	MIRROR - sensor B9	1
9250474	SOLENOID AY	3
9350841	SPRING	3
9351451	STAND-OFF - board	1
4E9245	SWITCH	2

Section 8: Adjustments and Replacements

SENSOR B35 and DOOR SOLENOID

Adjustment Specification

Purpose:
- To check that the open and close positions of the DOOR are detected correctly.
- To check that the DOOR is fully closed.

Specification: SENSOR B35 detects the open and closed positions of the DOOR.

Necessary Tools: None

Prerequisites: None

Postrequisites: Do test cycles using the DARKROOM FILM FEEDER.

To Check:

Warning

Dangerous Voltage

[1] Energize the MINILOADER 2000P.

[2] Use the service software, select:
- “Component Test”
- “Sensors”

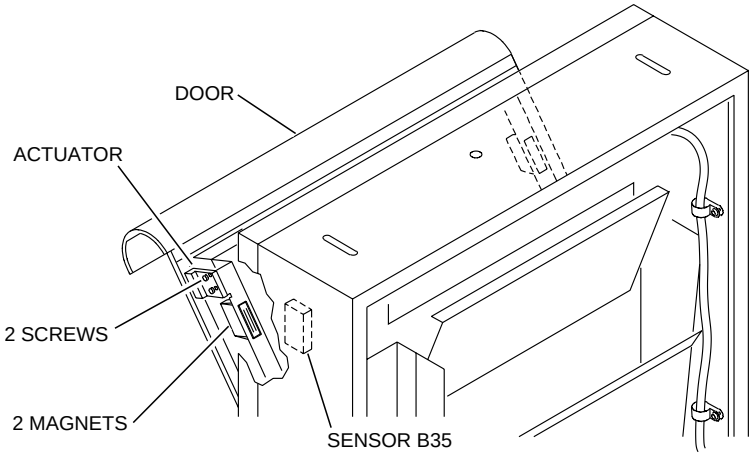
[3] Open the DOOR.

[4] Close the DOOR.

[5] Check that SENSOR B35 changes the status from “OFF” to “ON”.

To Adjust:

[1] Use the service software, select:
- “Component Test”
- “Sensors”



H191_0053BCA
H191_0053BC

[2] Open the DOOR.

[3] Loosen the 2 SCREWS.

[4] Adjust the ACTUATOR for SENSOR B35 in or out to obtain the correct position.

[5] Close the DOOR.

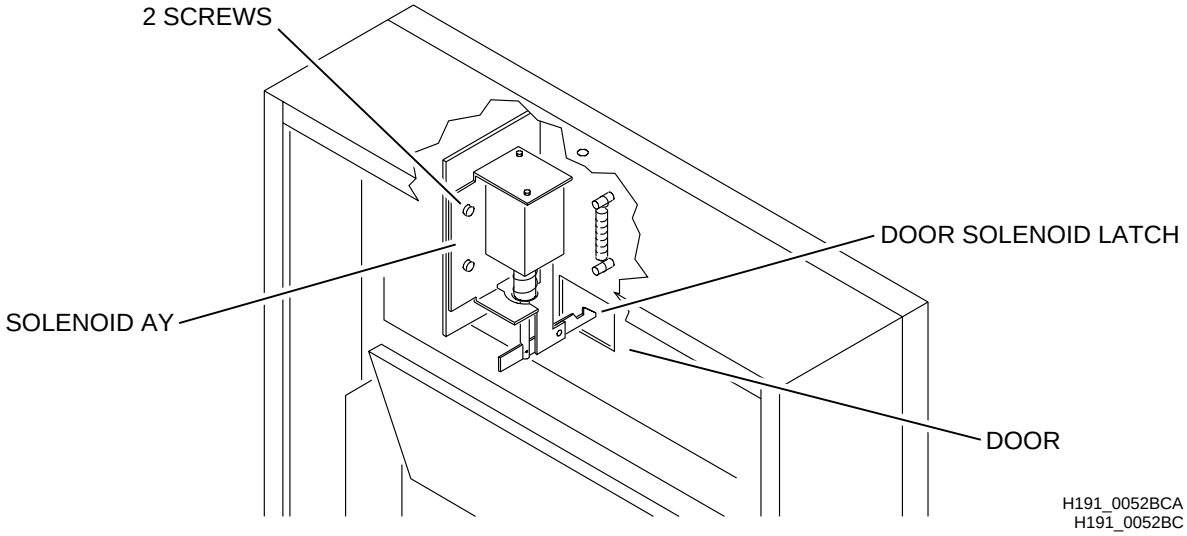
[6] Does SENSOR B35 change the status from “OFF” to “ON”?

Yes	No
Continue to Step 7.	Do Steps 2 - 6 again.

[7] Exit the service software.

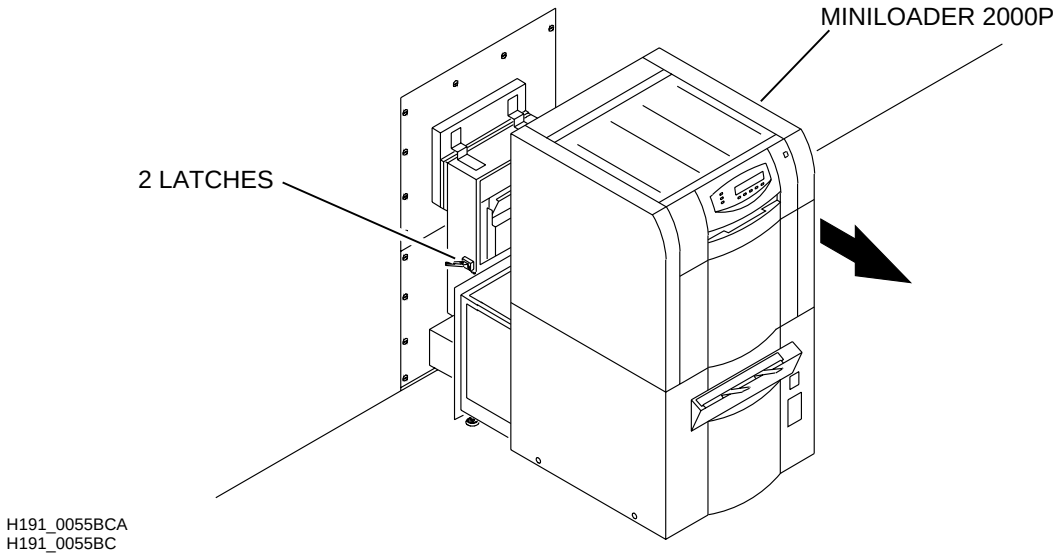
Warning
Dangerous Voltage

[8] De-energize the MINILOADER 2000P.



[9] Does the DOOR SOLENOID LATCH prevent the DOOR from being open?

Yes	No
Advance to Step 13.	Continue to Step 10.



[10] Move the MINILOADER 2000P from the MAMMOGRAPHY PROCESSOR:

(a) Release the 2 LATCHES.

(b) Move the MINILOADER 2000P forward.

[11] Adjust the SOLENOID AY so that the DOOR SOLENOID LATCH prevents the DOOR from remaining open:

(a) Loosen the 2 SCREWS.

(b) Move the SOLENOID AY backward or forward as necessary.

[12] Move the MINILOADER 2000P on top of the MAMMOGRAPHY PROCESSOR.

[13] Fasten the 2 LATCHES.

Warning

Dangerous Voltage

[14] Energize the MINILOADER 2000P.

[15] Check for correct operation.

Postrequisite:

None

Publication History

Print Date	Publication No.	ECO	Affected Pages	File Name	Notes
20DEC01	4E8890	--	All	4e8890.fm	First Printing

Kodak and *Min-R* are trademarks.

Printed in U.S.A. • 4e8890.fm

EASTMAN KODAK COMPANY
Rochester, NY 14650

HEALTH IMAGING